contents

	FIGURES	iv
	TABLES	v
	PREFACE	vii
I.	INTRODUCTION	1
II.	GENERAL DESCRIPTION	2
A:	the geraldton district	2
B:	climate	2
C:	soil depth, texture and topography	3
1.	SOIL DEPTH	3
2.	SOIL TEXTURE	3
3.	TOPOGRAPHY	6
D:	history of settlement	6
1.	THE PREHISTORIC PERIOD	6
2.	THE FUR TRADE PERIOD	7
3.	THE POST-CONFEDERATION PERIOD	11
E:	population	14
1.	POPULATION CHARACTERISTICS	14
2.	POPULATION PROJECTION	17
F:	transportation and communication	22
1.	RAILWAYS, HIGHWAYS AND OTHER ROADS	22
2.	AIR TRANSPORTATION	22
3.	HYDRO ELECTRIC POWER	24
4.	PIPELINES	24
5.	TELEPHONE & TELETYPE	24
6.	POSTAL SERVICE	24
7.	MICROWAVE	24
8.	TELEVISION AND RADIO	24
G:	economy and employment	25
1.	INTRODUCTION	25
2.	NORTH OF THE ALBANY RIVER	25
3.	SOUTH OF THE ALBANY RIVER	28
H:	degree of residential development	32
I:	fire	32
1.	INTRODUCTION	32
2.	FIRE AS A MANAGEMENT TOOL	33
3.	WILD FIRE CONTROL	33
4.	FIRE HISTORY IN THE GERALDTON DISTRICT	36
III.	LAND AND WATER MANAGEMENT	38
A:	introduction	38
B:	water	38
1.	INTRODUCTION	38
2.	WATERSHEDS	39
3.	WATERBODIES	39
4.	STREAMFLOW	41
5.	GROUND WATER	41
6.	WATER DIVERSIONS	42
7.	WATER REGULATION	43
C:	land tenure	44
1.	FEDERAL CROWN LAND	44
2.	PROVINCIAL CROWN LANDS	46
3.	LAND USE PERMITS	46
4.	LICENCE OF OCCUPATION	49
5.	LEASES	49
6.	PATENTED LANDS	52
7.	ORGANIZED MUNICIPALITIES AND PLANNING AREAS	52
8.	LAND TENURE SUMMARY	53
D:	cottaging	54

1. INTRODUCTION 54
2. EXISTING DEVELOPMENT 55
3. PRESENT USE AND ECONOMIC IMPACT 57
4. COTTAGING POTENTIAL 58
E: agriculture 58
1. PRESENT DEVELOPMENT 58
2. POTENTIAL 58
F: sensitive areas 59
1. DEFINITION 59
2. IMPORTANCE IN LAND USE PLANNING 59
3. SENSITIVE AREAS IN THE GERALDTON DISTRICT 59
IV. OUTDOOR RECREATION 62
A: introduction 62
B: provincial parks 63
1. INTRODUCTION 63
2. EXISTING DEVELOPMENT 64
3. PRESENT USE 65
4. POTENTIAL FOR EXPANDED USE 66
5. CAPABILITY 67
C: crown land recreation 68
1. INTRODUCTION 68
2. SUPPLY OF CROWN LAND RECREATION FACILITIES 68
3. EXISTING USE 69
4. POTENTIAL FOR CROWN LAND RECREATION 69
5. ECONOMIC IMPACT 70
D: commercial tourism 71
1. PRESENT DEVELOPMENT AND USE 71
2. THE ECONOMIC IMPORTANCE OF TOURISM 71
3. POTENTIAL FOR EXPANSION 75
E: sport fishing 75
1. INTRODUCTION 75
2. PRESENT USE 76
3. CAPABILITY 77
4. POTENTIAL 77
5. ECONOMIC IMPORTANCE 78
6. FISHERIES MANAGEMENT 78
F: wildlife 78
1. SMALL GAME 78
2. TIMBER WOLF 80
3. BLACK BEAR 82
4. WOODLAND CARIBOU 84
5. MOOSE 87
V. RESOURCE PRODUCTS 95
A: introduction 95
B: commercial fishing 95
1. HISTORY 95
2. PRESENT HARVEST 96
3. POTENTIAL FOR EXPANSION 98
4. ECONOMIC IMPORTANCE 98
5. BAIT FISHING 98
C: commercial fur 98
1. INTRODUCTION 98
2. PRESENT USE 99
3. TRAPLINE CAPABILITY POTENTIAL 101
4. ECONOMIC IMPORTANCE 101
D: wild rice 102
1. INTRODUCTION 102
2. PAST AND PRESENT USE 102
3. POTENTIAL 105
E: forest management 105
1. FOREST COVER 105
2. PRODUCTIVE FOREST AREA 105
3. PRESENT SITUATION 110
4. ECONOMIC IMPORTANCE 119
5. FUTURE DEVELOPMENTS 119
F: minerals and aggregate 120
1. HISTORY OF MINING ACTIVITY 120
2. MINERALS 122
3. AGGREGATES 126
4. PEAT 129
VI. PROBLEMS AND ISSUES 131
A: introduction 131
B: land management 131
1. INDIAN LAND CLAIMS 131
2. COTTAGING 132

C: outdoor recreation 132
1. THE TOURIST INDUSTRY 132
2. MOOSE 132
D: resource products 133
1. COMMERCIAL FISHING 133
2. COMMERCIAL FUR INDUSTRY 134
3. TIMBER HARVESTING 134
4. MINING 134
BIBLIOGRAPHY 135

figures

1. North Central Region 4
2. West Patricia Planning Area 5
3. Soil Depth 8
4. Soil Texture 9
5. Topography 10
6. Historic Sites of Hudson Bay Posts 13
7. Population (1976) 18
8. Transportation Facilities 23
9. Degree of Residential Development 34
10. Fires over 200 Hectares 35
11. Watersheds and Dams 40
12. Land Tenure 45
13. Geraldton District Parks and Crown Reserves 48
14. Crown Leases 51
15. Cottaging 56
16. Sensitive Areas 61
17. Access Points 72
18. Crown Land Recreation Areas 73
19. Commercial Tourist Establishments 74
20. Caribou Range 85
21. Wildlife Management Units 90
22. Moose Densities 91
23. Commercial Fisheries 97
24. Bait Fish Licence Area 100
25. Registered Trapline Management Areas 103
26. Wild Rice 104
27. Productive Forest Areas 109
28. Timber Licence Boundary 112
29. Cutovers 113
30. Wood Flow and Wood Processing Plants 116
31. Proposed Harvest 121
32. Mineral Potential 124
33. Aggregate Pits and Reserves 130

tables

1. Population of Indian Reserves and Settlements North of the Albany River, 1971-1979 15
2. Population of Communities South of the Albany River, 1971-1979 16
3. Population Projection to the Year 2000 for Indian Reserves and Settlements North of the Albany River 17
4. Population Projection to the Year 2000 for Communities South of the Albany River 20
5. Population Projection to the Year 2000 for the Geraldton Administrative District 21
6. Population > 15 Years of Age by Labour Force Activity, 1976 26
7. Employment Opportunities North of the Albany River, Geraldton District 27
8. Economy of Geraldton District, North of the Albany River 28
9. Labour Force Activity for the Population > 15 Years of Age South of the Albany River, 1976 29
10. Labour Force Breakdown by Industry Type-Geraldton District, South of the Albany River 29
11. Economy of the Geraldton District South of the Albany River 31
12. Fires Statistics for the Geraldton District 1974-1979 36
13. Dams in the Geraldton District 44
14. Indian Reserves in the Geraldton District 1978 46
15. Existing Crown Reserves and Provincial Parks 47
16. Land Use Permits (by use) in the Geraldton District 1979 47
17. Licences of Occupation by Use in the Geraldton District, 1979 49
18. Crown Leases by Use, in the Geraldton District, 1979 50
19. Patented Lands by Original Intent of Patent, Geraldton District 1979 52
20. Land Tenure in Municipalities in the Geraldton District 1979 53
21. Land Tenure Summary for the Geraldton District, 1979 54
22. Cottaging by Type in the Geraldton District 1980 55
23. Status of Approved Lake Development Plans in the Geraldton District, 1980 57
24. Provincial Parks in the Geraldton District 66
25. Park Use in the Geraldton District, 1979 66

26. Supply of Crown Land Recreation Facilities in the Geraldton District, 1979 70

27. Party Origin 76

28. Fishing Occurance and Harvest, the Remote and Road-Accessible Sport Fishermen 77

29. Sport Fishing Potential 77

30. Black Bear Harvest by Season, 1976-1980 83

31. Average Participation Per Year in Black Bear Hunt, Geraldton District, 1972-1976 84

32. Population Estimate for Caribou for Geraldton District Based on Hamilton's Work (1978a) 86

33. Projected Moose Population for Wildlife Management Units 17, 18 and 19 88

34. Number of Hunters and Harvest by Wildlife Management Unit 92

35. Potential Harvest by Sport Hunters 92

36. Harvest (kg) for 1973 to 1978 in Geraldton District 96

37. Trapper Origin 99

38. Harvest Statistics for Arm Lake-Burrows Lake Area 1975-1979 102

39. Area Summary for the Geraldton District 107

40. Annual Allowable Cuts for the Geraldton District 108

41. Crown Timber Licences 1979-80 111

42. Summary of Cutover Area by Management Unit in the Geraldton District, 1938-1979 114

43. Wood Using Mills in Geraldton District 1979 115

44. Summary of Silvicultral Operations in the Geraldton District 1974-1979 117

45. Summary of Annual Regeneration Needs for the Geraldton District 1980-2000 118

46. Annual Regeneration Requirement by Treatment for the Geraldton District, 1980-2000 118

PREFACE

The Ministry of Natural Resources is responsible for providing opportunities for outdoor recreation and resource development for the continuous social and economic benefits of the people of Ontario and to administer, protect and conserve public land and water. In order to achieve this provincial mandate, the Ministry's broad program objectives which include Land Management, Outdoor Recreation and Resource Production require large tracts of land. Due to the diversity of objectives and the large land areas required to meet these objectives, the potential for land use conflicts and inefficiencies are high.

As a result, the Ministry of Natural Resources has embarked on a comprehensive land use planning process intended to co-ordinate the various Ministry programs, concerning the use of land, so that conflicts and inefficiencies are minimized and all program objectives are addressed. The Land Use Planning process has a hierarchy of planning levels which include the Province, three planning regions, and the forty-six administrative districts.

The main purpose of the provincial plan is to provide policy direction to the planning regions, while the regional plan, in this case, the Strategic Land Use Plan for Northwestern Ontario (SLUP), provides both policy direction and some area designation to the administrative districts (see Figure 1). At the district level of planning, policy is to be translated into a land use plan.

In August of 1980 the final draft of the Strategic Land Use Plan for Northwestern Ontario was released for public review with the result that the administrative districts have initiated the third and final level of land use planning.

The Geraldton District is different in one respect from other Districts in the province. A portion of Geraldton District is included in the West

Patricia Planning Area. The plan was commissioned as a result of the signing of a Memorandum of Agreement between the Ontario Government and Reed Paper Ltd. granting them the first rights to new timber limits in the planning area, pending the fulfillment of certain conditions. One of the conditions was the preparation of a land use plan, the West Patricia Land Use Plan.

The area in question is north of the Albany River and west of 86° 30'W longtitude (see Figure 2). The West Patricia Land Use Plan is subject to specific terms of reference because of its special legislative mandate. The terms of reference are as follows:

The West Patricia Land Use Plan is a comprehensive local area plan which will guide the use of land through the year 2000. The purpose of the plan is to allocate the land base in order to achieve the objectives established in the Strategic Land Use Plan for Northwestern Ontario. While a regional and provincial perspective is to be recognized throughout the planning process, primary consideration will be given to local residents and traditional users within the planning area. The allocation of the land and water resources will ensure that any social, cultural or economic development will be compatible with the maintenance of a high quality natural environment and with the aspirations of the local people.

I INTRODUCTION

The District Land Use Plan will be developed in three phases as follows:

Phase I - Background Information, (spring 1980 to winter 1981)

Phase II - Proposed Policy and Optional Plans Report (winter 1981 to spring 1982)

Phase III - District Land Use Plan (spring 1982 to fall 1982)

The production of this phase of the District plan involves the collection of detailed information concerning the present use, capability and potential of the land and water resources of the District. Ultimately, this report will form the foundation against which the resource policies of the District will be tested, optional plans developed (Phase II) and finally from which the District Land Use Plan will evolve (PhaseIII).

The purpose of the District planning program is to produce a plan which co-ordinates the various land and water using programs of the Ministry so that conflicts and inefficienties are minimized and all program objectives are addressed. A regional and provincial perspective will be recognized throughout, but primarily consideration will be given to the local residents and traditional uses of the planning area. The allocation of land and water resources will attempt to ensure that development and use are compatible with the maintenance of a high quality natural environment, as well as being consistent with the expectations of local people.

The following report is intended to inform the public and generate discussion. It is also intended that public review of this document will result in the identification of any errors or omissions in the information

A:the Geraldton District

The Geraldton Administrative District is one of five districts that make up the North Central Region of the Ministry of Natural Resources (see Figure 1). The modern boundaries of the Geraldton District were established in 1972 with the reorganization of the Department of Lands and Forests to the Ministry of Natural Resources.

The Geraldton District covers about 110,075 square kilometers of which 9.6 percent (10,523 square kilometers) is water. The total population (1976) is 9630 people, of which 27.7% are status Indians.

The district can be divided into two zones of distinctive cultural and economic character: firstly, there is the accessible southern portion with 80.2% of the total population (10% status Indian); and secondly, there is the remote northern portion with 19.8% of the total population (98% status Indian). This diversity in character presents a challenging mosaic within which to prepare the District Land Use Plan.

B:climate

The climate of the Geraldton District is described by Chapman and Thomas (1968) as modified continental, the modification resulting from the presence of Lake Superior to the south and, to some extent, Lake Nipigon to the west and Hudson Bay to the north (1). Air masses affecting the planning area originate over the continental land masses to the west, north and south. The modified continental climate is characterized by moderate precipitation, concentrated in the summer months and temperatures

that vary widely from the winter season to the summer season.

In the winter, cold polar air masses producing dry clear weather persist over the planning area a high proportion of the time (2). In the summer, a continuing succession of cyclonic storms sweeps over the area. Warm humid air masses from the south interact with cooler drier air from the north to give two or three days of fine weather followed by warmer more humid weather often with changeable winds and rain for a day or two (3).

The mean daily temperature for the year varies from -1.5°C in the northern part of the planning area to 0.1°C in the south. The coldest month is January with a mean daily temperature of -19.8°C and the warmest month is July with a mean daily temperature of 17°C. Precipitation decreases from 615 mm in the southeast to 550 mm in the northwest portion of the planning area. The greatest amount of precipitation occurs in June (89.1mm) and the least occurs in January (44mm) (4).

The length of the growing season varies from less than 140 days in the north to between 150 and 160 days in the southern part of the Geraldton District (5). This reflects the temperature trends mentioned previously.

C:soil depth, texture and topography

Information on soil depth, soil texture and topography is available from the Ontario Land Inventory mapping in the Geraldton District. This mapping covers only 28% of the district (30,615 square kilometers).

1. SOIL DEPTH

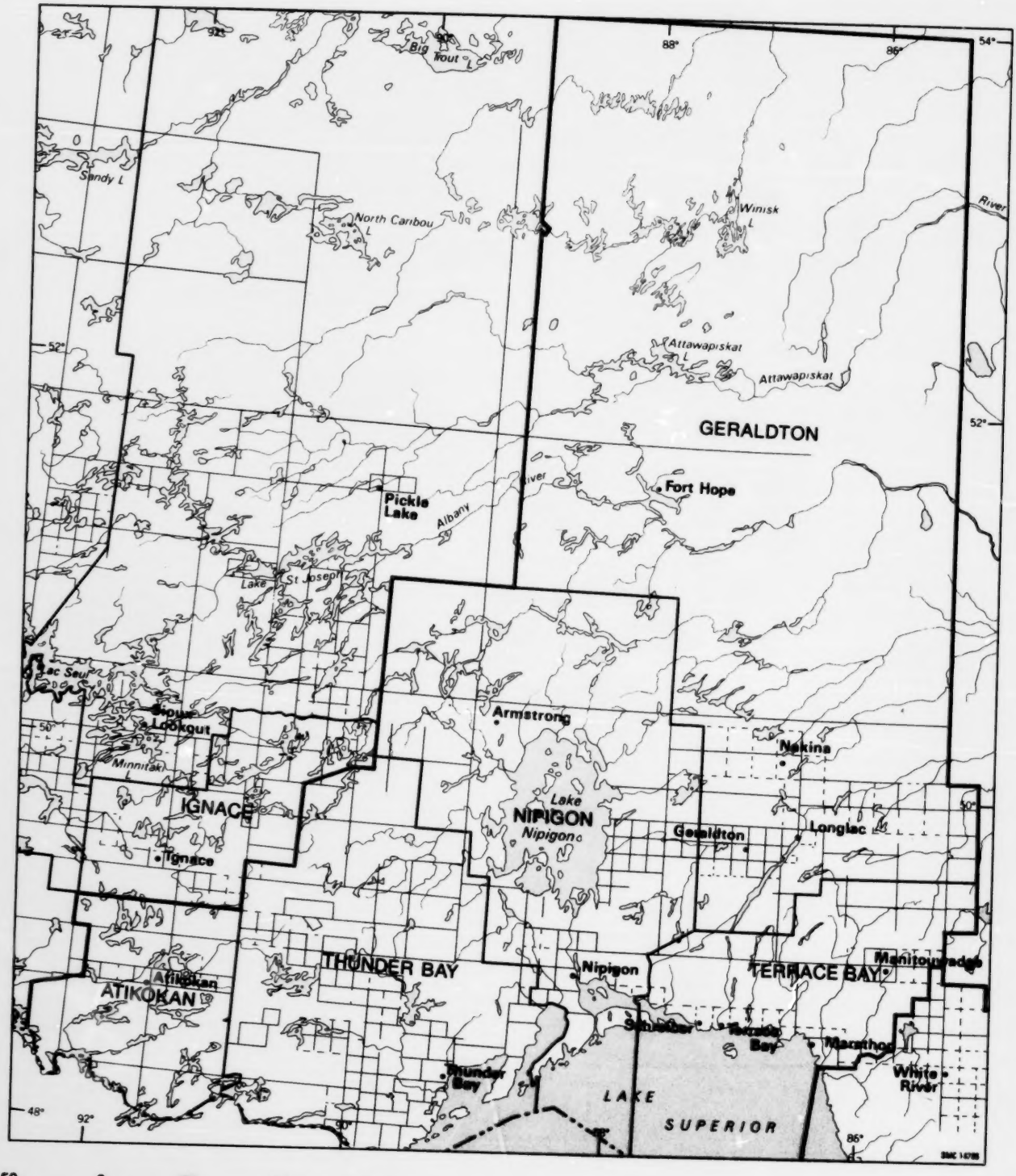
Soil Depth is defined as the distance from the surface of the soil to the bedrock. The most frequently occuring soil depth is the deep and shallow association which covers 42% of the mapped area. Deep soils cover 31%, shallow soils cover 22% and bare and shallow soils cover 5% of the area. Distribution of soil depth is displayed in Figure 3.

2. SOIL TEXTURE

Soil Texture is defined as the relative proportion of the various mineral

NORTH CENTRAL REGION

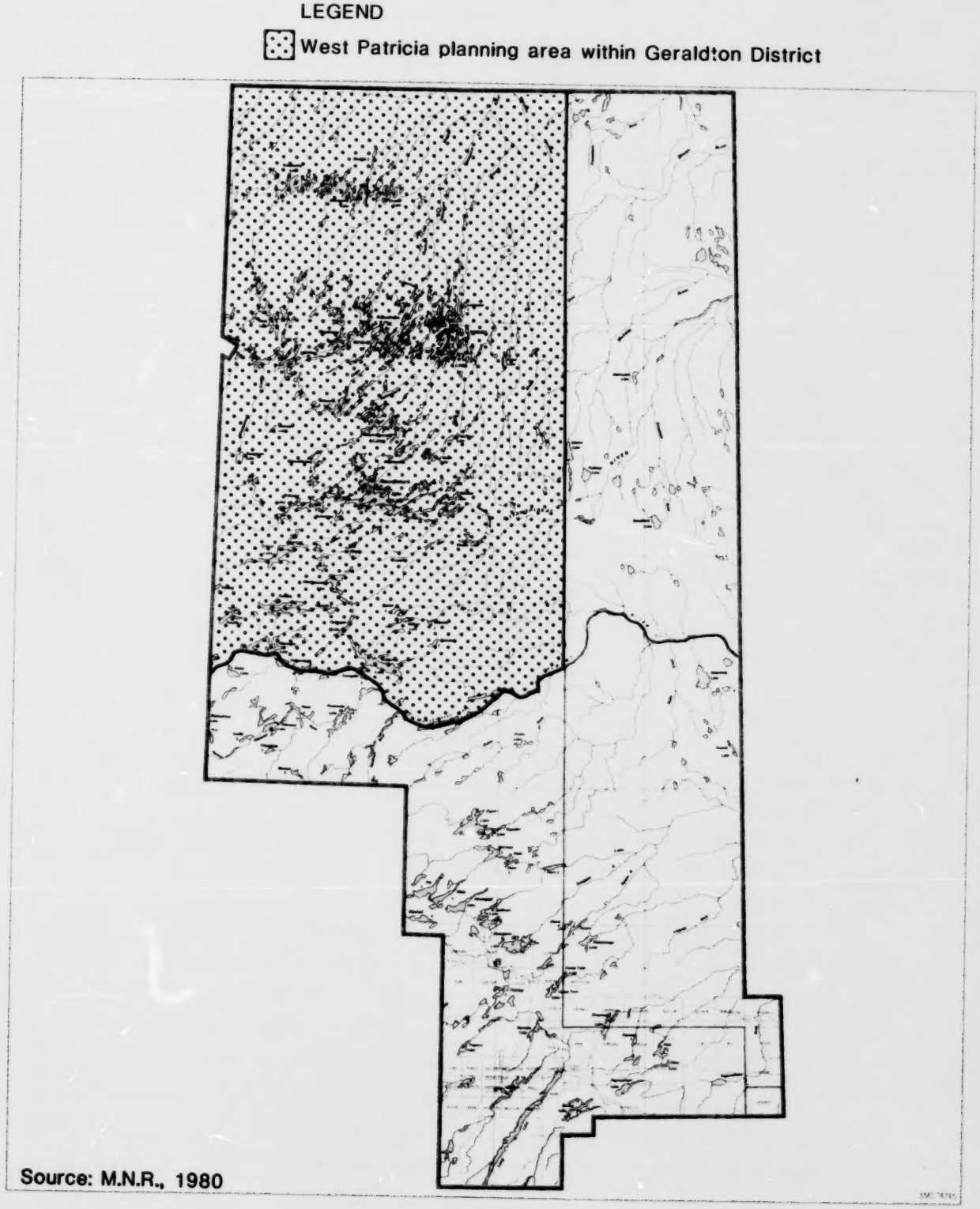
Figure 1



50 0 50 100 150 km
25 0 25 50 75 100 m

West Patricia Planning Area

Figure 2



soil particle sizes. For the purposes of this report they have been grouped as follows: sand (including sand with other materials); loam (including loam with other materials); silt (including silt with other materials); clay (including clay with other materials); peat and muck; and, other (which includes all unconsolidated material on strongly broken uplands). Sand covers 74% of the mapped area. Clays represent 18% of the area and are located generally in the east and north-east (see Figure 4). Silts cover 4% of the area, the major occurrence being in the southeastern portion. Peat deposits (37%) are located adjacent to the Hudson Bay lowlands. Loam and other materials account for 1% of the mapped area each.

3. TOPOGRAPHY

Topography is classified according to the degree of brokenness of the landscape. Weakly broken plains is the most frequently occurring topographic classification, covering 88% of the mapped area (see Figure 5). This is followed by moderately broken uplands covering 8%, very weakly broken plains covering 3% and strongly broken uplands covering 1% of the mapped area. Moderately and strongly broken uplands occur primarily in the southern and south-eastern corners of the district although small pockets do occur throughout the remainder of the mapped area. Very weakly broken plains are concentrated in the eastern portions of the district adjacent to the Hudson Bay lowlands.

D:history of settlement

The prehistory and history of the Geraldton District will be discussed under the following headings:

1) The Prehistoric Period;
2) The Fur Trade Period; and
3) The Post-Confederation Period.

1. THE PREHISTORIC PERIOD

The retreat of the Wisconsin glaciers about 9,000 years ago brought with it a succession of Indian cultures which inhabited the planning area. The first of these cultures was the Paleo-Indian people who probably inhabitated the southern portion of the district (6). They were nomadic

people who hunted big game behind the retreating glaciers.

About 3,000 B.C. another distinct group, the Archaic people, had evolved from or replaced their Paleo-Indian predecessors (7). They were big game hunters living in extended family groups, trading native copper from the Lake Superior area and Knife River Flint from North Dakota.

Another cultural change occurred about 200 B.C. with the appearance of the Laurel peoples in the planning area (8). They were the first users of pottery in the area and the larger number and size of their campsites indicates that the population size had greatly increased. They continued the tradition of big game hunting but probably possessed semi-permanent villages in the vicinity of large sturgeon, whitefish and pickerel spawning grounds.

About 1,000 A.D. newcomers called the Blackduck and Selkirk peoples moved into the area as the Laurel culture declined (9). They also made pottery but it was more poorly made than Laurel pottery. The Selkirk and Black duck people were hunters, fishermen and gatherers, and archaeological evidence indicates that they lived together in the same area at the same time, probably trading goods and intermarrying. It appears that the Selkirk people were ancestors of the modern Cree but there is controversy in archaeological circles about the identity of the Blackduck peoples, some suggesting they were the modern Ojibway, another Assiniboine, and another Cree (10).

The European influence started to infiltrate the planning area by the middle of the 17th century as trade goods were introduced to the area by other native middlemen such as the Hurons. Aboriginal technology began to change with the substitution of European items for traditional ones.

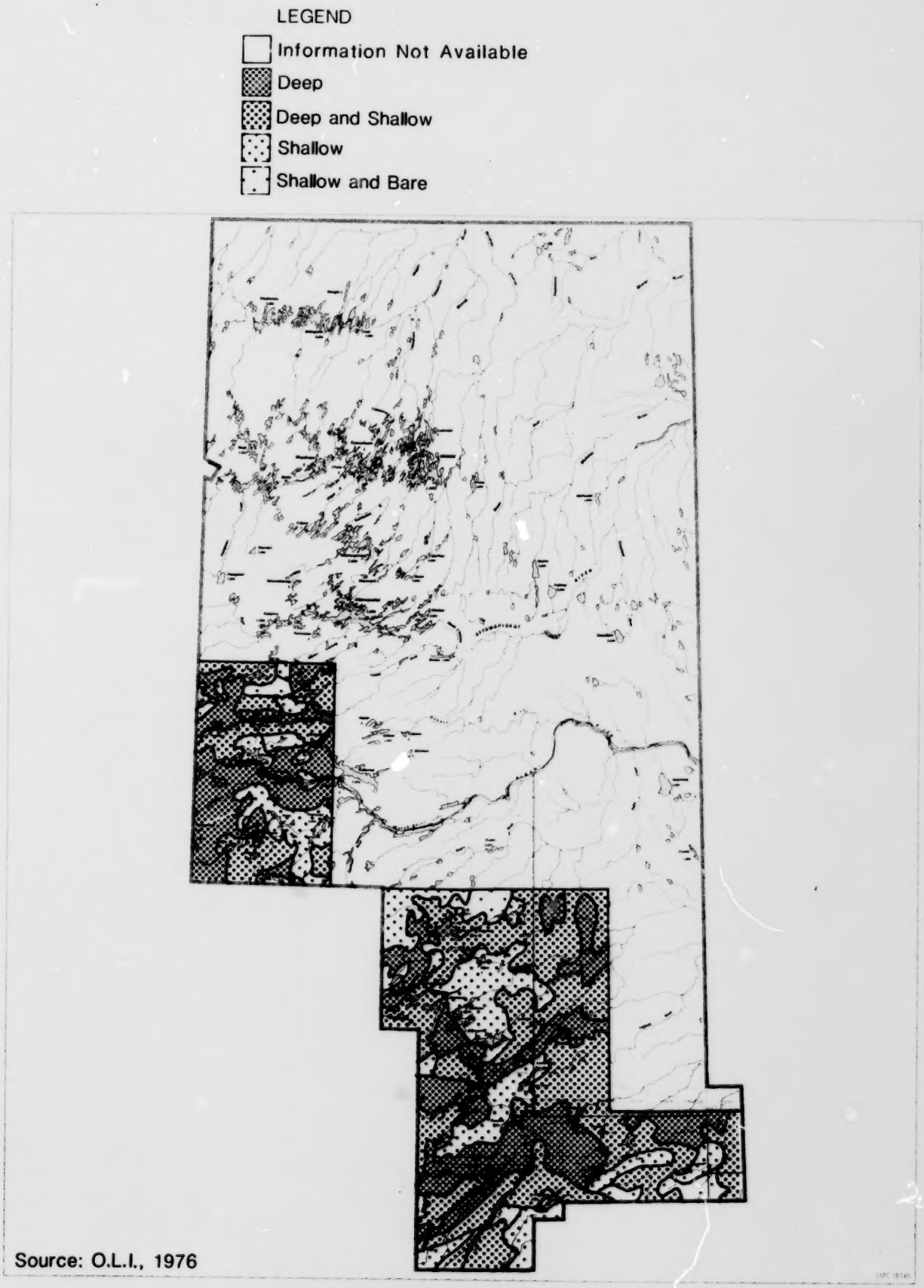
2. THE FUR TRADE PERIOD

The history of the fur trade in the Geraldton District is a long and colourful one. By the early 1600's, French traders were moving into the area. The formation of the Hudson's Bay Company in 1670 and later the North West Company (formed in 1783) led to an intense competition for fur.

The Hudson's Bay Company prefered to locate its posts on the coast and have the Indians travel from the interior. However, they were forced to move inland in response to their competitors policy of locating posts more convenient to the Indians. In 1777, Gloucester House was

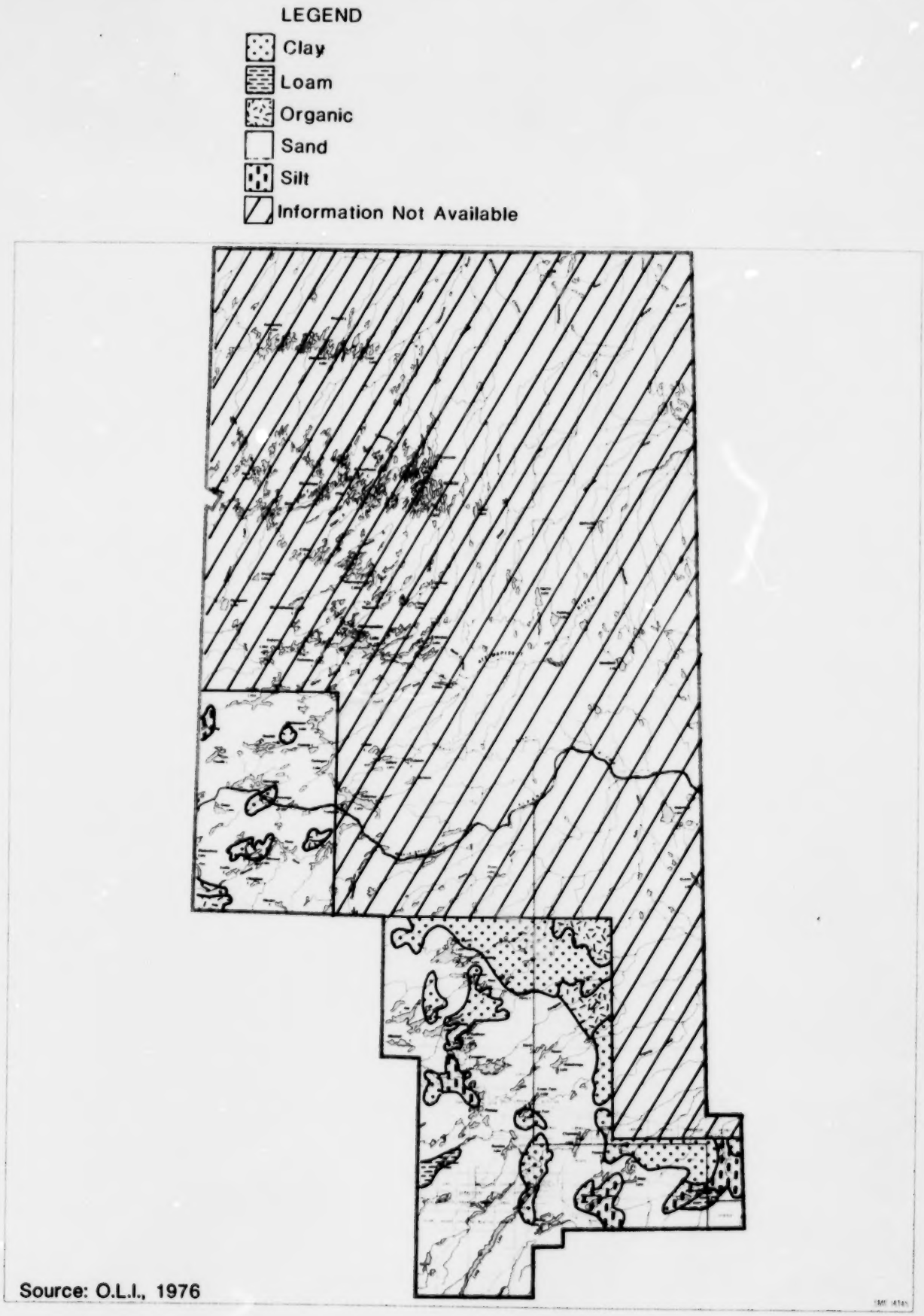
Soil Depth

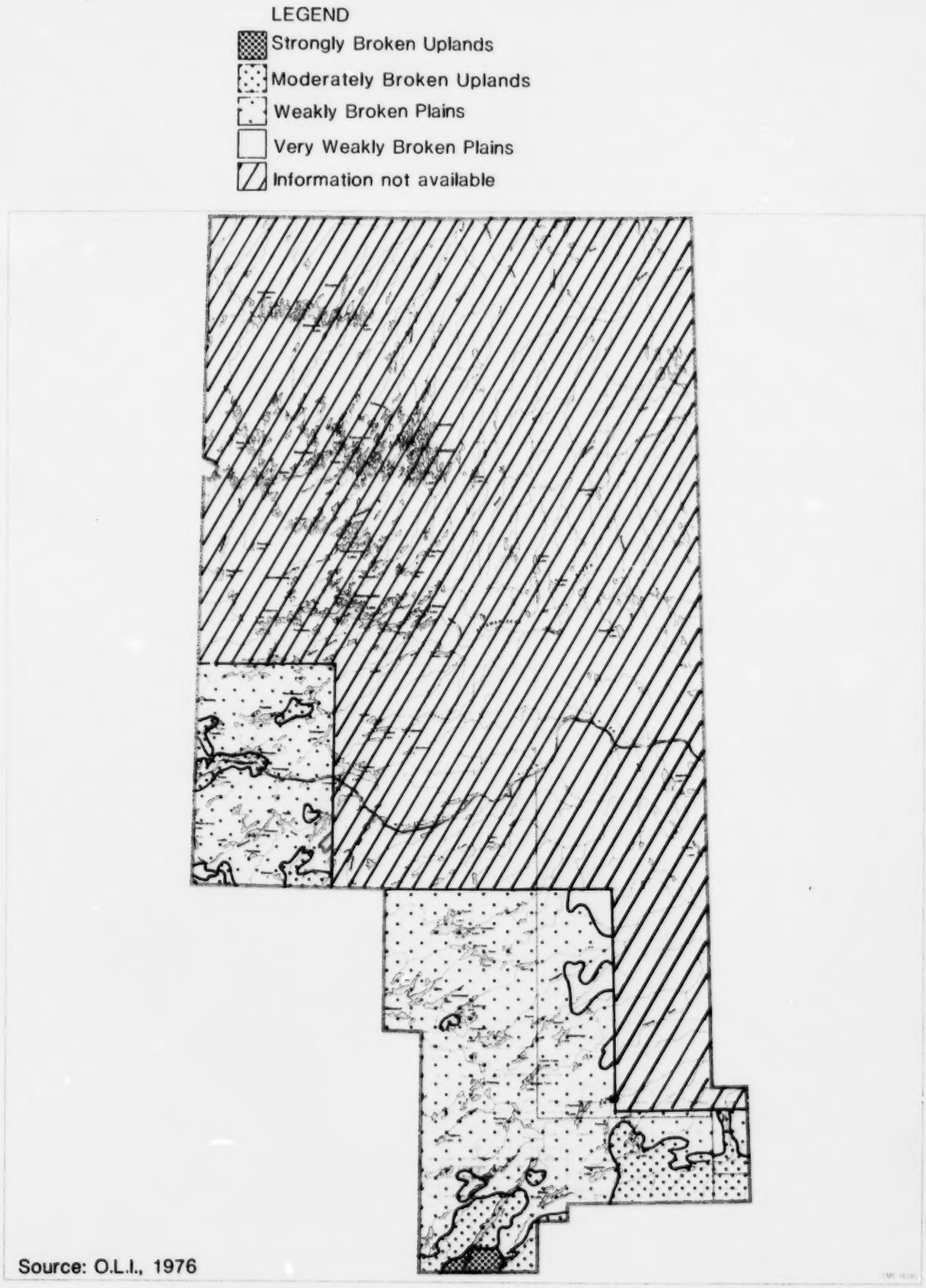
Figure 3



Soil Texture

Figure 4




LEGEND
Strongly Broken Uplands
Moderately Broken Uplands
Weakly Broken Plains
Very Weakly Broken Plains
Information not available
Source: O.L.I., 1976
40 0 40 80 120 km
20 0 20 40 60 80 m

established on Washi Lake and in 1794, Marten Falls was established as a supply depot (see Figure 6) (11).

Both companies used a system of main posts and outposts. Main posts were permanent, located along major transportation routes while outposts were situated on sites more convenient to the Indians. In the Geraldton District the only main post was Gloucester House located on Washi Lake. Outposts were located on Eabamet Lake (1 Hudson's Bay Co., 1 Northwest Company Post), Attawapiskat Lake (Hudson's Bay Co.), Long Lake (Northwest Company and Hudson's Bay Co.) and Kenogamisis Lake (unknown) (see Figure 6) (12).

The coalition of the Hudson's Bay Company and the Northwest Company in 1821 resulted in the virtual elimination of all competition for fur. Thus, the Company was able to locate posts more conveniently for itself. This started a trend of Indians returning to the same post year after year, forming semi-permanent settlements which became the basis for present day settlement patterns.

3. THE POST-CONFEDERATION PERIOD

In 1869, the Hudson's Bay Co. sold the territory over which it had control to the Canadian Government. The territory was eventually transferred to the Province of Ontario in 1912 (13).

The initial interest of the Federal Government was to settle the question of treaties and reserves for the Indians of the regions. Two treaties cover the Geraldton District. The Robinson-Superior Treaty (No. 60) was signed in 1850, covering the Lake Superior Watershed. Reserve #58 was established near Longlac in 1914 as a result of this treaty.

Treaty No.9 was signed in 1905-1906 with additions in 1929 and 1930. This created the following reserves (see Figure 7):

1) Reserve #64 (Fort Hope);
2) Reserve #65 (Marten Falls Band); and
3) Reserve #77 (Long Lake Band).

North of the Albany River, two developments contributed to the establishment of permanent Indian communities. The first was the establishment of permanent day schools in Fort Hope, Lansdowne House, Webequie and Ogoki, (see Figure 7); the second was the increased availability of government assistance programs to the Indians. The consequence was the establishment

of permanent Indian settlement and the "emergence of the government as a major economic resource." (14).

Pressures created by settlement in permanent villages have caused splinter groups to break away and form new communities. Kasabonika, established in 1963 by a group of people from Big Trout Lake, was granted reserve status in 1976. In 1975, a group of people from Lansdowne House established a settlement at the present site of Summer Beaver (see Figure 7).

South of the Albany River different forces were at work shaping the character of the area. By 1914, the National Transcontinental and Canadian Northern Railways were completed through the District. Many small communities (eg. Keemle, Octopus, Kinghorn, Pagwa, Grant) developed along the lines, their primary function being to service the trains and maintain the track. However, as technology improved most were phased out of existence with the servicing functions being centralized into certain communities. Nakina benefited in this way, by being chosen in 1923 as the division point on the railway in anticipation of the completion of a cut-off line from Longlac to Nakina. Caramat was established in 1916 as a railway service stop and persisted as a viable community when Marathon Corporation based a logging operation there in 1947.

The discovery of gold around Kenogamisis Lake in 1931 brought a mining boom to the area. The townsite of Geraldton was located where the road from Little Longlac gold mine intersected the railway line. Between 1934 and 1967 as many as 10 gold mines have operated in the area.

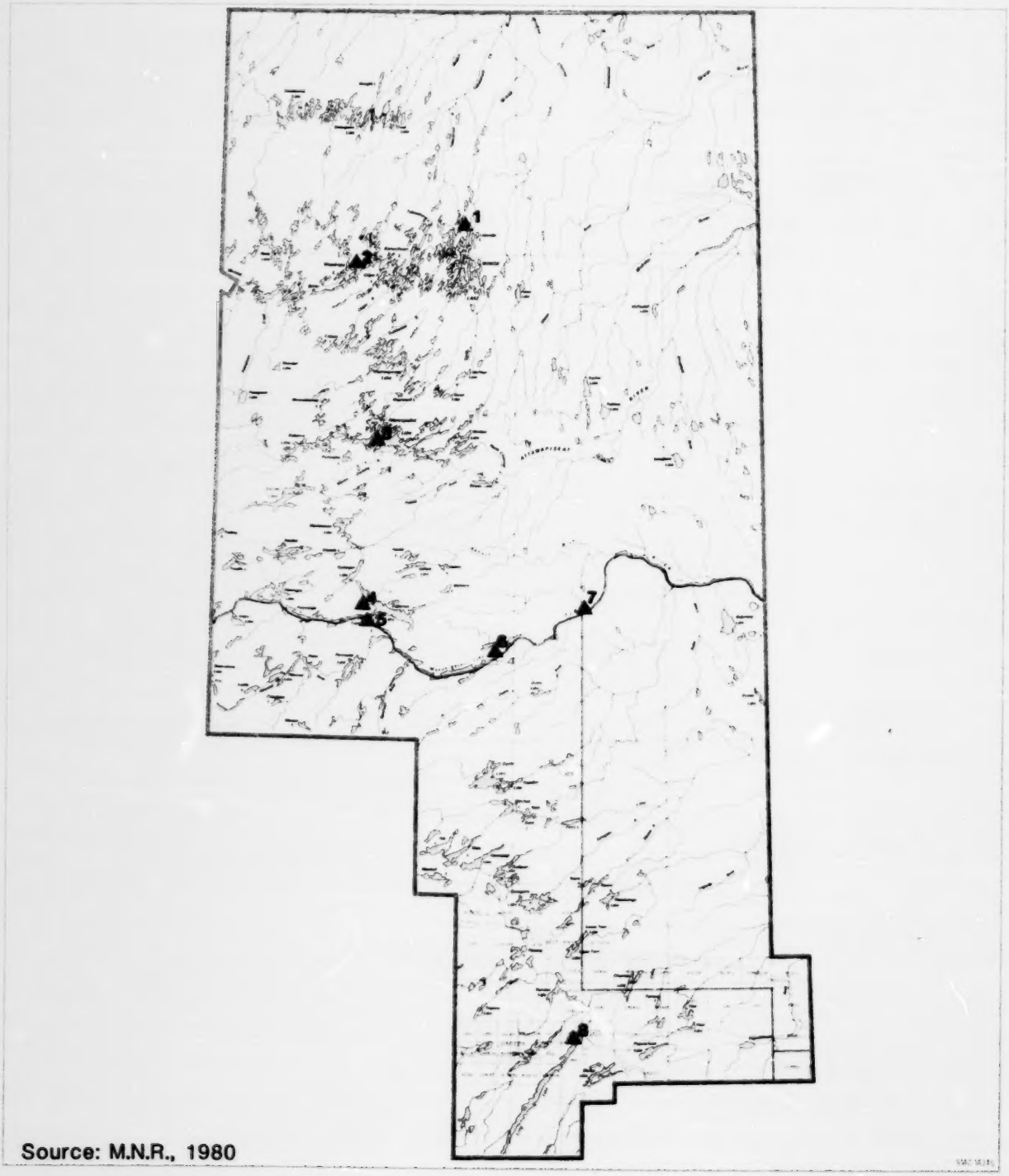
The commencement of logging operations in the planning area followed shortly after the development of the railway. Driftwood Lands and Timber Limited of Sault Ste. Marie harvested timber from Reserve No.77 from 1929 to 1939. In 1933, the Arrow Land and Logging Company established a sawmill at the present site of Aroland and harvested timber for the production of railway ties and lumber. A community of Indian people from Longlac established adjacent to the sawmill. The operation ended in 1941 but was resumed in 1947 through 1961 under the auspices of Great Lakes Lumber and Shipping Company.

A consortium called the Pulpwood Supply Company began operating along the Kenogami River, north of Longlac, in 1937. By 1939, the Long Lake diversion had been completed by Ontario Hydro which allowed

Historic Sites of Hudson Bay Posts Figure 6

LEGEND

1. Fort Winisk
2. Fort Wapikopa
3. Lake Attawapiskat Post
4. Fort Hope
5. Eabamet Lake House
6. Gloucester House
7. Marten Falls House
8. Long Lake Fort



Source: M.N.R., 1980

40 0 40 80 120 km
20 0 20 40 60 80 m

the transportation of raw pulpwood, by water, to Lake Superior. From there it was taken to various paper mills in the United States. In 1947 Kimberly-Clark bought out its partners in the consortium and changed the name to Longlac Pulp and Paper Company Ltd. By 1948, a pulp mill and town had been constructed at Terrace Bay and raw pulpwood was being processed there. The company name was changed again in 1957, to Kimberly Clark Pulp and Paper Company Limited.

Highway development was slow in coming to the planning area. In 1942, highway No.11 was completed from Nipigon to Longlac. In 1958, highways No. 584 and 625 were completed to Nakina and Caramat, respectively.

The Geraldton District can be divided into two areas where different historical development trends produced distinctive characteristics. North of the Albany River is an area populated predominantly by Indian people living in small communities, with minimal industrial development and inaccessible by road. South of the Albany River, the district is populated primarily by non-natives in small communities whose locations have been determined by transportation and/or resource developments.

E:population

1. POPULATION CHARACTERISTICS

Certain problems arose when population statistics were compiled for the Geraldton District. Firstly, detailed information for the Indian communities is not always available. Often different sources provide contradictory information so a judgement must be made as to which is most reliable. There is no information concerning the numbers of native people living on Crown Land outside of organized Indian settlements. Consequently the population statistics presented here deal with those people located in settlements. Secondly, information for unorganized communities is not available so population estimates must be made using sources of information which may be of questionable reliability. However, despite these drawbacks, the information presented here is believed to be

accurate enough for purposes of the land use plan.

The total population of the Geraldton District in 1976 was 9130 people. Of this number 28% were status Indians and 72% were of other Euro-Canadian origins. There are distinctive differences between the area North and South of the Albany River. The population North of the Albany River is 1902 (1976) of which 97.5% are status Indians. This represents 20.8% of the total district population. The population information for individual communities is presented in Table 1.

South of the Albany River, the population is 7228 (1976) of which 9.4% are status Indians. This represents 79.2% of the total population of the Geraldton District. The population information for communities south of the Albany River is presented in Table 2.

TABLE 1: POPULATION OF INDIAN RESERVES AND SETTELMENTS NORTH OF THE ALBANY RIVER, 1971-1979

Community	1971	1973	1976	1977	1978	1979	% change per year
Fort Hope Reserve #64	489(1)	600(2)	643(1)	638(1)	n.a.	652(1)	4.2
Webequie	n.a.*	340(2)	400(4)	n.a.	n.a.	n.a.	5.9
Lansdowne House	n.a.	232(2)	235(3)	n.a.	n.a.	193(1)	1.8
Summer Beaver	n.a.	n.a.	137(4)	n.a.	n.a.	193(1)	13.6
Kasabonika Reserve	n.a.	251(2)	348(1)	n.a.	n.a.	n.a.	11.5
Marten Falls Reserve #65	173(1)	170(2)	148(1)	117(1)	n.a.	132(1)	-3.0
TOTA:		1584	1902				6.7

Sources:

1) D.I.A.N.D. Statistics;
2) MNR Estimates from the Directory of Reserves and Settlements in Northwestern Ontario, 1973
3) Statistics Canada, Census Information, 1971-1976
4) Ministry of Northern Affairs, Directory 1978, 1976 Statistics
** n.a. = not available*

TABLE 2: POPULATION OF COMMUNITIES SOUTH OF THE ALBANY RIVER, 1971-1979

Community	1971	1976	1978	1979	% change per year
Caramat	428**	442(2)	n.a.	n.a.	0.7
Longlac	1,484(3)	1,937(2)	2,189(5)	n.a.	6.8
Geraldton	3,178(3)	3,127(3)	3,010(5)	n.a.	-0.8
Nakina	673(4)	602(4)	902(5)	n.a.	4.9
Aroland	280(3)	295(1)	n.a.	n.a.	1.1
I.R. #58	371(3)	383(1)	454(1)	440(1)	2.3
I.R. #77	62(3)	92(1)	n.a.	109(1)	9.5
Other *	282**	350(2)	n.a.	n.a.	4.8
TOTAL	6,758	7,228			1.4

* *Includes McLeod Townsite, Little Longlac Townsite, Rosedale Point, Geraldton North, Pagwa and Kowkash.*
** *estimated population*
n.a.-not available
Sources:
1) *D.I.A.N.D. Statistics;*
2) *Ministry of Northern Affairs, Directory, 1978, 1976 Statistics;*
3) *Statistics Canada, 1971 and 1976 Census.*
4) *Draft Report to Royal Commission on the Northern Environment North of 50° - Phase II, prepared by James F. MacLaren Ltd., 1979;*
5) *Town Census, 1978*

Figure 7 shows the population distribution in the Geraldton District by native and non-native communities for 1976.

Between 1973 and 1976, the population north of the Albany River grew at an average rate of 6.7% per year. The growth rate of the native population in this area is affected by the following factors:

1) improved health and medical facilities have significantly decreased the mortality rate while the birth rate has remained high;
2) government aid programs have guaranteed a certain standard of living regardless of the ability of the land and resources to support the population; and
3) the inaccessible nature of the area severely restricts migration.

South of the Albany River, population growth averaged 1.4% per year

between 1971 and 1976. The native population increased at a slightly higher rate than the average and the non-native at a slighter lower rate. Population growth in this area is usually the result of the expansion or establishment of a new resource based industry. In the past, the area has experienced net emigration as young people leave to take advantage of a wider range of job opportunities elsewhere. This reflects the much greater mobility of the population South (as opposed to North) of the Albany River.

2. POPULATION PROJECTION

A population projection is made for the Geraldton District to the year 2000 at 5 year intervals. The methods of projection and the assumptions made are stated below. Where external factors which could cause significant population change exist, a projection is made considering both the occurrence and non-occurrence of the event.

a. North of the Albany River

Table 1 shows the population changes (including % change per year) in the Indian communities from 1971 to 1979.

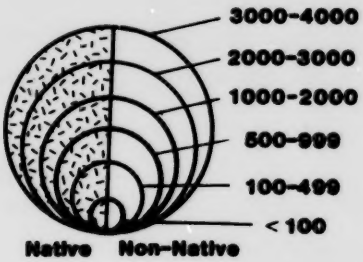
It is assumed that the actual change in persons per year for each community will continue to the year 2000. The population projection is shown in Table 3:

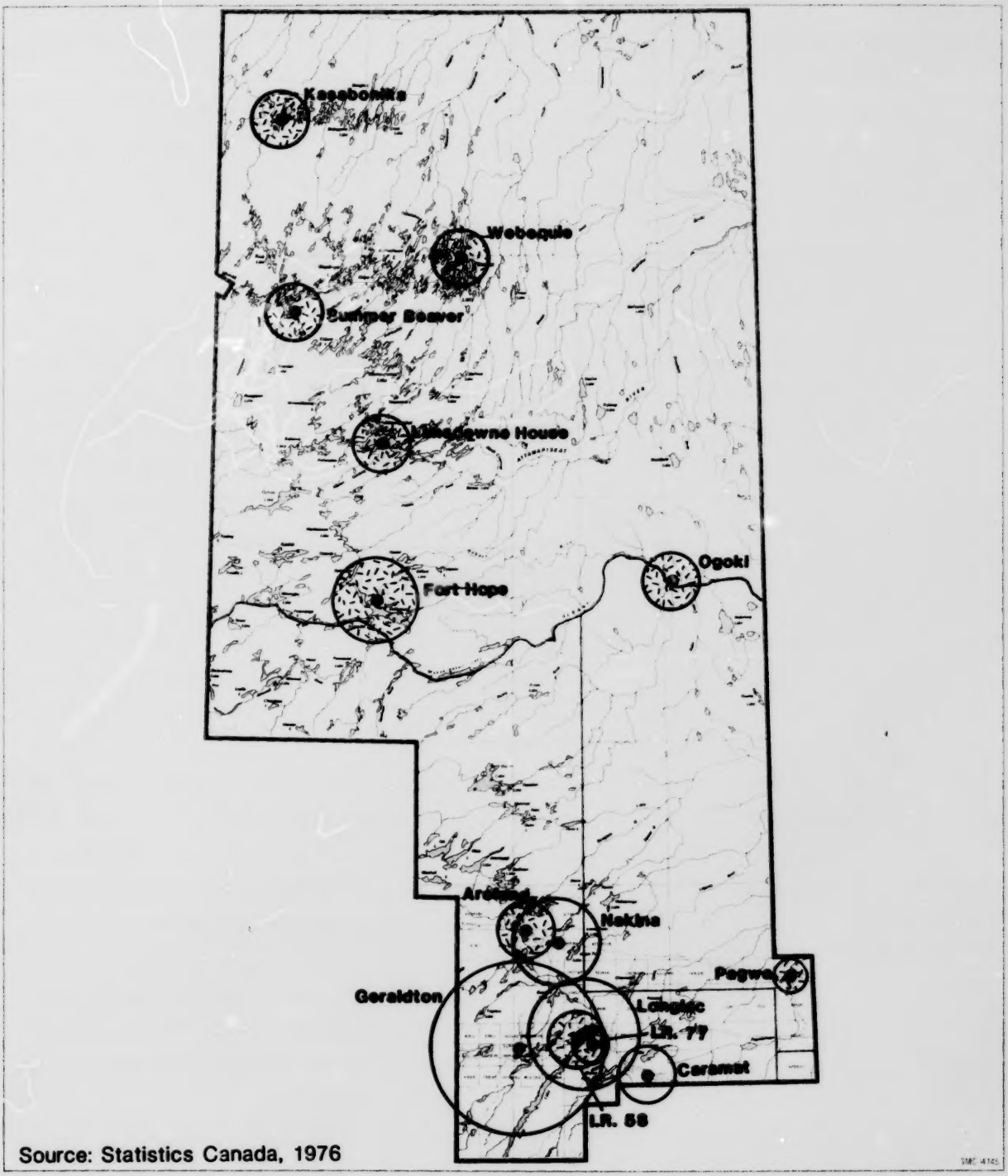
TABLE 3: POPULATION PROJECTION TO THE YEAR 2000 FOR INDIAN RESERVES AND SETTLEMENTS NORTH OF THE ALBANY RIVER

Community	Base Population and Year	Year			
		1985	1990	1995	2000
Fort Hope	652 (1979)	772	872	972	1,072
Webequie	400 (1976)	580	680	780	880
Lansdowne House	235 (1976)	271	291	311	331
Summer Beaver	193 (1979)	307	402	487	592
Kasabonika	395 (1978)	598	743	888	1,022
Marten Falls	132 (1979)	102	77	52	27
TOTAL	1902 (1976)	2,630	3,065	3,500	3,935

Population (1976)

Figure 7





Source: Statistics Canada, 1976

40 0 40 80 120 km
20 0 20 40 60 80 m

The population projection predicts an average annual growth rate of 4.5% to the year 2000. Trends for individual communities may not be realistic when projected to the year 2000 however, the projection appears reasonable in total.

b. South of the Albany River

Factors such as the possibility of new resource developments, immigration and emmigration must be considered when making a population projection for this area. Table 2 shows the population statistics and annual growth rate between 1971 and 1979 for communities south of the Albany River. Assumptions have been made concerning the population growth in individual communities. In Caramat, Aroland, and Indian Reserves #58 and #77, the absolute annual increase shown in Table 2 is projected to the year 2000.

In Longlac, it is assumed that the past growth rate of 6.8% per year will level off to 2.5% per year since the population increase due to the Kimberly-Clark expansion has peaked.

The Town of Geraldton has been declining in population between 1971 and 1978. The absolute rate of decline is projected to the year 2000. The Geraldton and Suburban Planning Area Official Plan predicts the addition of 2000 people if Algoma Steel and Dofasco commence mining operations between 1985 and 1995.

The expansion of Kimberly-Clark's woodlands operation in Nakina is expected to add 1,100 people to the 1976 population (by 1985). A growth rate of 2.5% per year after 1985 is assumed as a result of natural increase and service sector expansion. The development of Dofasco iron mine would add 1,000 people to the population.

The population of communities grouped as 'other' will be assumed to increase at the same absolute rate as in the past. Table 4 shows the population projection to the year 2000 for communities south of the Albany River. Two projections are made based on the assumptions that mining developments do and do not occur.

South of the Albany River, a population increase of 2.0% per year is forecast to the year 2000 without mining development and 3.9% per year if the mining developments do occur.

c. The Geraldton District

Table 5 shows the population projection for the Geraldton Administrative District. The projected population increase to the year 2000 is 2.5% per year if no mining development occurs, and 4.0% per year if mining development occurs.

TABLE 4: POPULATION PROJECTION TO THE YEAR 2000 FOR COMMUNITIES SOUTH OF THE ALBANY RIVER.

Community	Base Population and Date for Projection	1985		1990		1995		2000	
		P1*	P2**	P1	P2	P1	P2	P1	P2
Caramat	442(1976)	469	-	484	-	499	499	514	514
Longlac	2,189(1978)	2,574	-	2,849	-	3,124	3,124	3,399	3,399
Geraldton	3,010(1978)	2,842	-	2,722	-	2,602	4,602	2,482	4,717
Nakina	902(1978)	1,702	-	1,917	-	2,132	3,132	2,347	3,347
Aroland	295(1976)	322	-	337	-	352	352	367	367
I.R. #58	440(1979)	500	-	550	-	600	600	650	650
I.R. #77	109(1979)	169	-	219	-	269	269	319	319
Other	350(1979)	476	-	546	-	616	686	686	686
TOTAL	7,228(1976)	9,054	-	9,624	-	10,194	13,264	10,764	13,999

* *P1: Projection made without considering future mining developments.*

** *P2: Projection made considering possibility of future mining developments.*

TABLE 5: POPULATION PROJECTION TO THE YEAR 2000 FOR THE GERALDTON ADMINISTRATIVE DISTRICT.

	1976	1985		1990		1995		2000	
		P1*	P2**	P1	P2	P1	P2	P1	P2
N. of the Albany R.	1,902	2,630	-	3,065	-	3,500	3,500	3,935	3,935
S. of the Albany R.	7,228	9,054	-	9,624	-	10,194	13,264	10.764	13,999
TOTAL	9,130	11,684		12,689		13,694	16,764	14,699	17,934

** P1: Projection made without considering future mining developments*
*** P2: Projection made considering possibility of future mining developments.*

F:transportation and communication

1. RAILWAYS, HIGHWAYS AND OTHER ROADS

The main line of the Canadian National Railway runs through the southern portion of the Geraldton District through Caramat, Longlac, and Nakina. Branch lines extend from Longlac through Geraldton to Thunder Bay and from Nakina east through Pagwa (see Figure 8). Total track length in the planning area is 319 kilometers.

There are four (4) Provincial Highways in the Geraldton District. They are: Highway 11 (171km); Highway 584 (68km); Highway 625 (29km); and Highway 643 (19km). Total highway length is 287 km.

Kimberly-Clark of Canada maintains 13 logging access roads which are held under land use permit. They total about 690km in length. Several of the roads are of major importance. The Goldfield-Catlonite Roads which connect Geraldton and Longlac respectively to Terrace Bay have public access restricted by manned gates. The reason for this is to prevent the safety hazard which would result from use of haul trucks and unlimited public access. The Ogoki road is a DREE funded road which will run from Hanover Lake to Thurman Lake (32 kilometres south of the Albany River). This road will access the new portion of the Kimberly-Clark licence area.

An old winter road which was used to haul freight connects Pickle Lake with Fort Hope, Lansdowne House, and Webequie. The route is held under land use permit by the Fort Hope Band at present.

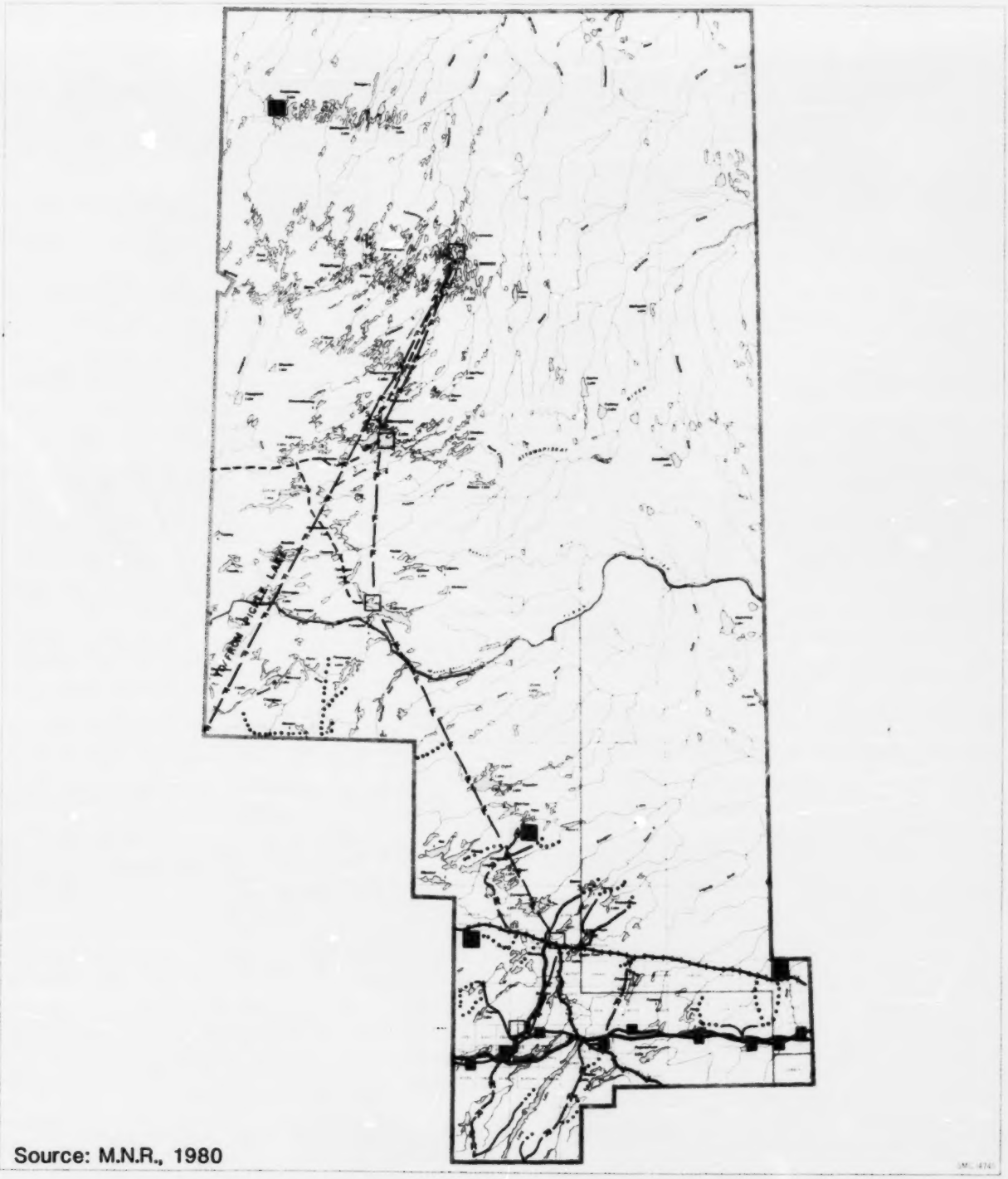
2. AIR TRANSPORTATION

Air transportation provides service for the normal transport of passengers, freight, and mail. For many of the remote Indian communities this is their link with the outside world. Major air strips are located at Webequie, Lansdowne House, Fort Hope and Geraldton and are under construction at Kasabonika and Marten Falls. In addition each northern community has facilities for the docking of float planes (see Figure 8).

Transportation Facilities Figure 8

LEGEND

- Highway
- Resource Extraction Road
- Public Road
- Winter Road
- Proposed Road
- Railroad
- Scheduled Air Service
- Active Airstrip
- Scheduled Flight Lines
- Trans Canada Pipeline



Source: M.N.R., 1980

40 0 40 80 120 km
20 0 20 40 60 80 m

There are scheduled flights between Webequie, Lansdowne House, Fort Hope, Nakina, and Geraldton three times per week. NorOntair provides connecting flights to points east and west of Geraldton six days per week.

3. HYDRO ELECTRIC POWER

Consumers of hydro electric power in the road accessible portions of the Geraldton District receive their power from Alexander Landing near Cameron Falls on the Nipigon River. All power lines follow the same general route as the highways. The remote communities north of the Albany River rely on diesel generators for their power. Ontario Hydro operates a diesel plant at Lansdowne House, Webequie and Summer Beaver. The Fort Hope Band Power Association operates a diesel generator to serve that community.

4. PIPELINES

The Trans-Canada natural gas pipeline passes through the Geraldton District. The pipeline services consumers in Longlac and Geraldton.

5. TELEPHONE AND TELETYPE

Bell Canada provides telephone service to all communities in the Geraldton District. Many of the small Indian communities are equipped with radio telephones which provide communication linkages to the main Bell system.

There are teletype terminals located in Geraldton, Longlac and Nakina.

6. POSTAL SERVICE

Road accessible communities have postal service on a daily basis. Fort Hope, Lansdowne House and Webequie have regular delivery three (3) days per week. All other communities have sporadic postal service.

7.MICROWAVE

Microwave towers are located every 48km along the line of transmission. The system is used to transmit telephone calls, and television and radio broadcasts by the CBC. It is also used in conjunction with the Telesat system to provide communication with the northern communities.

8. TELEVISION AND RADIO

Reliable television and radio services are provided by the Canadian Broadcasting Corporation. Television programing comes directly from Toronto while C.B.Q. radio originates in Thunder Bay. There is one cable

television operator in Geraldton while Longlac and Nakina receive video-taped programs which are broadcast over a low power transmitter.

Geraldton, Longlac, Nakina, Fort Hope and Lansdowne House broadcast C.B.Q. radio through the use of low power radio transmitters. Kasabonika has an independent radio station which relies on a local transmitter.

G:economy and employment

1. INTRODUCTION

The economy and employment characteristics of the Geraldton District are distinctively different north and south of the Albany River. North of the Albany River, employment is primarily seasonal in nature with a large portion of the area income resulting from government transfer payments (eg. social assistance, family benefits, unemployment insurance etc.). South of the Albany River most employment is full time and employment income makes up a much greater proportion of the total area income. A more involved discussion for both north and south of the Albany River follows.

2. NORTH OF THE ALBANY RIVER

Detailed, area-specific information is not available. Consequently, assumptions must be made and data from various sources (with differing degrees of reliability) must be used.

a. Employment

Table 6 shows an estimate of labour force size for 1976. The significant factors of note here are: a) 50.0% of the total labour force is unemployed;

b) 61.6% of the population greater than 15 years is not in the labour force.

This includes those attending school, collecting social assistance and those greater than 65 years of age. Also included are women who may not traditionally seek wage employment.

Assuming that all males "not in the labour force," between 15 and 65 years of age, are willing and able to work but cannot find employment, the actual labour force can be more accurately estimated at 615 persons.

Most of the available jobs are seasonal in nature. In 1970, 40% of the people that worked did so for a period of 1-13 weeks only. Sixty-nine percent worked less than one-half year (15).

TABLE 6: POPULATION > 15 YEARS OF AGE BY LABOUR FORCE ACTIVITY, 1976*

Employed	Unemployed	Total in Labour Force	Not in Labour Force	Total Population 15 years
200	200	400	650	1055

Source: Statistics Canada, 1976 Census
** does not include Marten Falls Indian Reserve*

Table 7 provides a general information on the distribution of employment opportunities among the available labour force. Most of the actual employment is resource-based or related to band administration. Trapping provides the most annual employment (assuming that all licenced trappers trap for the entire season). Of a total of 31,980 man weeks of work available to a fully employed labour force, 46.3% are realized.

b. Economy

The economy of an area can be assessed by the amount of income which the exports bring to the inhabitants of the area. North of the Albany River, the total per capita income for 1977 was estimated to be $1,345 per year (16). This means the total area income is close to 2,600,000 dollars. The contributions to the total income from the various sectors of the economy are shown in Table 8.

The major sources of income are: salaries for band administration and other functions; social assistance; and the commercial fur industry. The income from fur and fish, and the commercial tourist industry account for 22.3% of the total wages paid in the area north of the Albany River.

TABLE 7: EMPLOYMENT OPPORTUNITIES NORTH OF THE ALBANY RIVER, GERALDTON DISTRICT.

Type of Employment	Number of Employees Full Time	Seasonal	Work (man/weeks)	% of Total Available Labour Force
Sawmilling		50	1,300*	4.1
Trapping		249	6,972	21.8
Commercial Fishing		64	768	2.4
Tourism	9	(some seasonal staff)	1,400	4.4
Fire Fighting		106(1979)	75	.2
Tree Planting		19(1979)	76	.2
Band Administration	49	19	2,900*	9.1
Retail/Trade	20*		1,040	3.3
Transportation /Communication	5(1970)		260*	.8
TOTAL			14,791	46.3
Social Assistance to Available Labour Force				53.6
TOTAL			31,980	100

*rough estimates

TABLE 8: ECONOMY OF THE GERALDTON DISTRICT, NORTH OF THE ALBANY RIVER

Sector	Revenue to the Area	Wages	Wages as a % of Total Area Income
Sawmilling	N/A	n.a.	n.a.
Commercial Fur	461,035 (1978-79)	461,035	17.7
Commercial Fish	58,096 (1978)	58,096	2.2
Tourism	425,053 (1977)*	61,406(1977)	2.4
Fire Fighting	15,437 (1977)	15,437(1977)	.6
Tree Planting	12,992 (1978)	12,992(1978)	.5
Other (Band Administration, Transportation & Communications etc.)	n.a.	n.a.	43.6
Social Assistance			33.0**
TOTAL		2,600,000	100

N/A = not applicable
n.a.= not available
* *includes government grants*
** *Source: Polar Gas Project, Volume V, Public Interest; Socio-Economic Statement: Manitoba and Ontario*

3. SOUTH OF THE ALBANY RIVER

a. Employment

The discussion of employment will concentrate primarily upon the resource extraction industries which are closely linked with Ministry of Natural Resources programs. Table 9 shows the labour force activity for the Geraldton District, south of the Albany River. The unemployment rate at the time of the census was 7.7%. The number of people not in the labour force (> 15 years of age) includes women who are homemakers, students in school, those people collecting social assistance and those on other types of pensions.

Table 10 show the labour force breakdown by industry type. Employment in the natural resource extraction and processing sector dominates the employment market. The forest industry is by far the largest employer with Kimberly-Clark of Canada and Weldwood dominating this sector. The transportation and communication sector is the second largest employer

TABLE 9: LABOUR FORCE ACTIVITY FOR THE POPULATION > 15 YEARS OF AGE, SOUTH OF THE ALBANY RIVER, 1976*

Employed	Unemployed	Total in Labour Force	Not in the Labour Force	Total
2,830	235	3,065	1,965	5,035

Source: Statictics Canada, 1976 Census.
**includes Marten Falls Indian Reserve.*

TABLE 10: LABOUR FORCE BREAKDOWN BY INDUSTRY TYPE-GERALDTON DISTRICT, SOUTH OF THE ALBANY RIVER.

Sector	Number of Employees		Available Work (man/weeks)	%of Total Work Opportunities
	Full Time	Seasonal		
Natural Resources				
Timber*	1343		69,836	43.8
Commercial Fishing		13	156	.1
Trapping		162	4,536	2.8
Tourism**	180		5,040	3.2
Aggregate Extraction	14		728	.5
Ministry of Natural Resources	50	120	4,520	2.8
Construction**	70		3,640	2.3
Transportation & Communications	368		19,136	12.0
Retail/Sales***	194		10,088	6.3
Other (including other Gov't Agencies etc.)			41,700	26.2
TOTAL			159,380	100.0

* *includes manufacturing - related employment.*
** *Statistics Canada, 1971 and 1976 Census.*
*** *Statistics Canada, 1971 and 1976 Census; Community Employment Strategy Report.*

with the Canadian National Railway being the primary employer.

When comparing employment north and south of the Albany River several major differences are evident: 1) an unemployment rate of 50% and 7.7% for the north and south respectively;
2) the predominance of seasonal employment opportunities north of the Albany and permanent employment south of the Albany;
3) 62.1% of the population over 15 years of age is not in the labour force north of the Albany while the corresponding figure for the South is 39.2%

b. Economy

The information required to calculate the total area income is not available for years more recent than 1976. The recent expansion of the timber industry and the resultant population increase have made this data outdated. Information relating to the natural resource industries is available for 1978 and/or 1979. Total area income can only be estimated by prorating the available information on income from the natural resource sector according to the percentage of employment as shown in Table 10. This calculation will provide a rough estimate but is not altogether valid since the income of employees in the timber industry (which dominates natural resource sector employment) is above average.

Table 11 shows the information that is available for the planning area south of the Albany River. The sectors of the economy that are responsible for the economic well being of an area are those which export products, or provide services which are purchased or paid for by customers or employers from outside the area. In the Geraldton District, south of the Albany River, the export of timber products is the primary source of area revenue. Tourism is second to timber in importance, with commercial fish and fur a distant third. The other major source of revenue is from government programs which pay wages to employees and/or contract local businesses for various projects.

The natural resource sector accounts for about 49.5% of the wages paid in the area (including MNR wages). The sector called "other" includes: 1) wages paid by other government agencies; 2) the retail, construction and transportation sectors; and 3) the tourism sector.

In comparison with the area north of the Albany River, the major differences are: 1) the average per capita wages are $1,367 and $10,496 for north and south of the Albany respectively. The difference is a result of the higher employment level, the existence of a large timber industry and the consequent development of a larger service sector in the southern part of the district; and

2) government transfer payments (eg. social assistance, unemployment insurance) comprise 33% and 3% of the area income north and south of the Albany respectively.

TABLE 11: ECONOMY OF THE GERALDTON DISTRICT, SOUTH OF THE ALBANY RIVER.

Sector	Total Value of Goods & Services Produced ($)	Income (Wages) ($)	Wages as a % of Total Area Income
Natural Resource			
Timber	79,274,000	36,106,000	47.6
Commercial Fish	12,276	12,276	.01
Fur	336,190	336,190	.4
Tourism	5,500,000	n.a.	n.a.
Ministry of Natural Resources	2,850,000	1,100,000	1.49
Government Transfers		2,351,908	3.1
Other	n.a.	35,961,626*	47.4
TOTAL		75,868,000	100.0

Source: MNN files, Statistics Canada, 1976
n.a. = not available
* *includes tourism*
** *Polar Gas Project, Volume V. Public Interest. Socio-Economic Statement: Manitoba and Ontario*

H:degree of residential development

The degree of residential development is a measure of the density of any single family residence including a permanent home, cottage, lodge, or motel unit. Using a 5km mercator grid cell, a particular development class is assigned. Figure 9 shows the degree of residential development in the Geraldton District.

Very dense development occurs around Longlac and Geraldton, dense development occurs around Nakina; Caramat and Fort Hope have the classification ' moderate'; and, sparse development occurs around Aroland, the remaining Indian communities north of the Albany River, and around cottaging developments and tourist lodges.

I:fire

1 INTRODUCTION

Fire management is defined as, "the protection of natural and man-made resources from fire and the use of fire in meeting defined land management goals and objectives".

Fire and fire management can have a strong effect on land use planning objectives. Wildfire has a continuing influence on timber harvesting, and fish and wildlife population and harvest levels. Consequently, this affects the commercial tourist industry, Crown land recreation, and local economies. The various land use planning options must be reviewed with respect to their implication regarding fire management.

2. FIRE AS A MANAGEMENT TOOL

Prescribed burning is an approved management technique used by the Ministry of Natural Resources for the following: 1) to reduce the fire hazard on high risk sites; 2) to aid in forest management; 3) to improve and/or develop wildlife habitat; and 4) to maintain a desired vegetative environment for the purpose of recreation or preservation.

3. WILD FIRE CONTROL

In the Geraldton District, fire suppression resources are located at Fort Hope, Wawong Lake and the Geraldton fire centre on Kenogamisis Lake. Fort Hope has an equipment and fuel cache, while both other locations are manned during the fire season.

The District is divided into the Intensive Protection Zone (IP) and Outside Intensive Protection Zone (OIP) (see Figure 10). It is the Ministry policy that all wild fires within the intensive protection zone are to be aggressively suppressed. Fires north of the intensive protection line are suppressed only to protect human life and values such as isolated communities and tourist and outpost camps. Fires that do not threaten these values are mapped for statistical purposes only.

Outside the intensive protection area is the Fort Hope Protection Zone. This is an area surrounding Fort Hope Reserve 64 which contains merchantable timber that may be of economic value to the community in the future. An initial attack is preformed on all fires occuring within this zone. If it fails, senior fire management staff at the District assess the situation and develop a strategy in consultation with Regional office in Thunder Bay. The strategies may range from no action to aggressive action to suppress the fire and any intermediate steps.

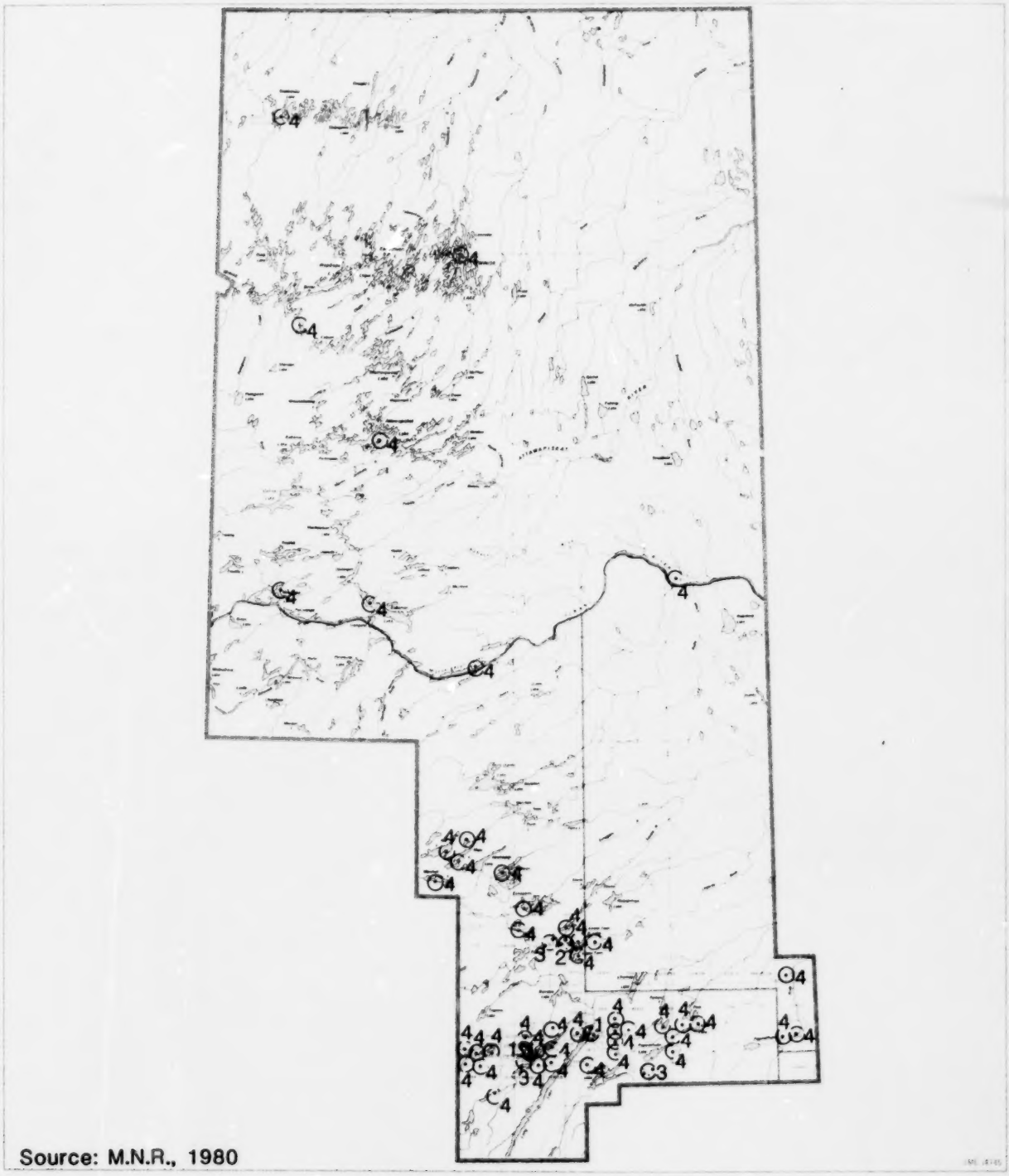
The Ministry of Natural Resources is reviewing ways of increasing the involvement of private forest companies in fire suppression operations.

Inside the intensive protection zone, all fires may not be acted upon during periods of multiple fire occurrences if the resources are not available. Decisions are made based upon the values to be protected versus the probability of success. Priorities for fire control protection are: 1) human life; 2) private and public real estate; 3) timber production areas; 4) other areas (ie. production forest, wildlife habitat, and aesthetics); and 5) wilderness.

Degree of Residential Development

Figure 9

LEGEND	
Classes	Development Units/Km ^{2}
1-Very Dense	16
2-Dense	8-15
3-Moderate	4-7
4-Sparse	1-3
5-None	0



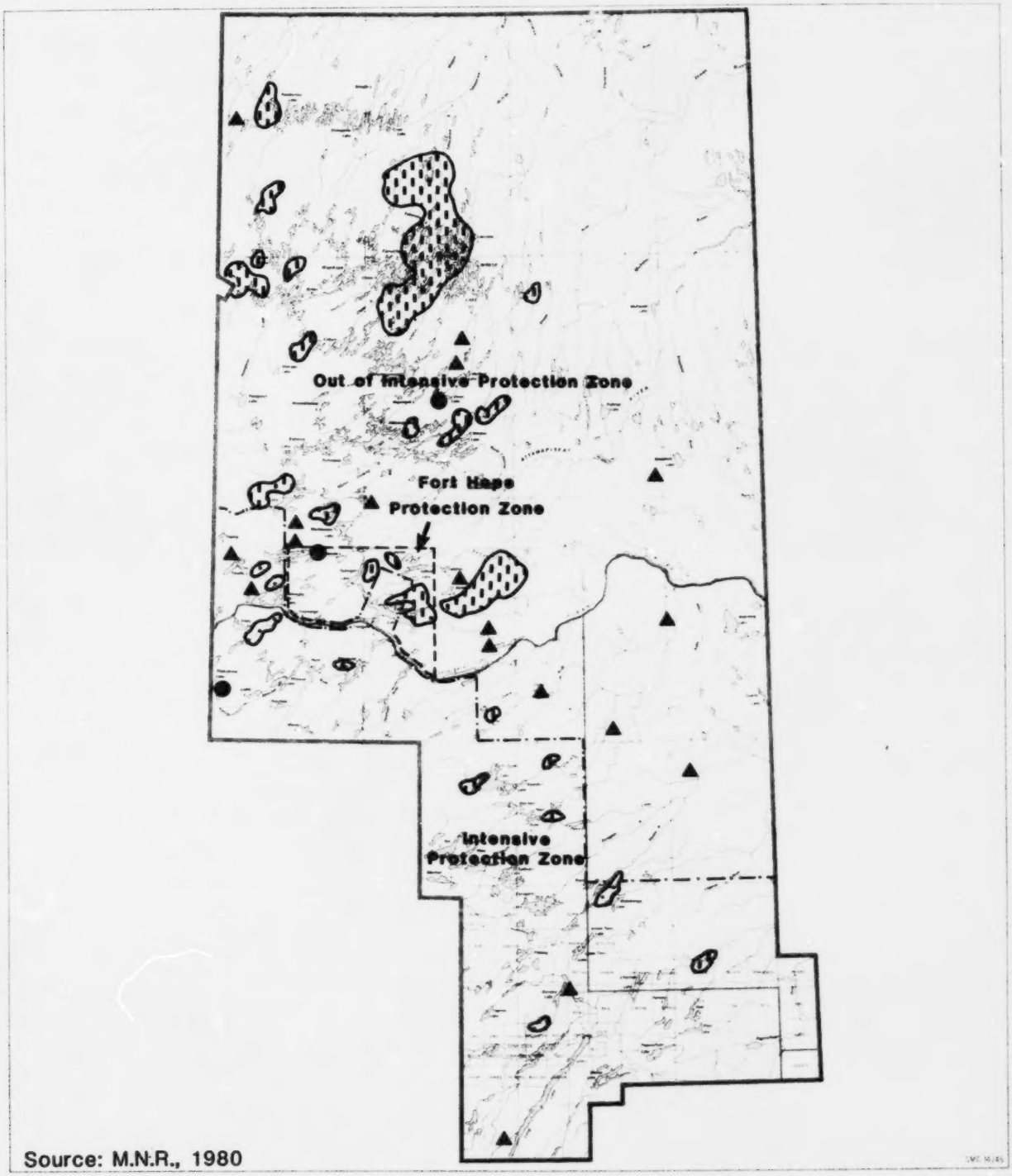
Source: M.N.R., 1980

40 0 40 80 120 km

20 0 20 40 60 80 m

Fires Over 200 Hectares

Figure 10



4. FIRE HISTORY IN THE GERALDTON DISTRICT

In the Geraldton District between 1975 and 1979, most fires were caused by lightning (54%) as opposed to man-caused* fires (46%). Inside the intensive protection zone, the reverse is true, that is the percentages of lightning and man-caused fires are 45% and 55% respectively. Outside the intensive protection zone 83% are lightning-caused and 17% are man-caused.

Figure 10 shows the fires in the Geraldton District since 1960 which were larger than 200 hectares.

TABLE 12: FIRE STATISTICS FOR THE GERALDTON DISTRICT, 1974-1979.

	Intensive Protection Zone			Outside Intensive Protection Zone		
Year	Number of Fires	Average Size(ha)	Total Area Burned(ha)	Number of Fires	Average Size (ha)	Total Area Burned (ha)
1974	18	119	2,145	12	6,395	76,736
1975	80	.6	51	9	178	1,601
1976	85	3	244	35	11,246	393,610
1977	37	28	1,040	7	10,230	71,610
1978	14	9	127	8	490	3,917
1979	44	4	189	11	210	2,311
TOTAL	278	14	3,796	82	6,704	549,785

* *includes those of undertermined cause*

Notes:

1. *L.T.Chapman and M.K.Thomas, The Climate of Northern Ontario, Department of Transport,, Meteorological Branch, Climatological Studies, Number 6 (Toronto, 1968), p.2.*
2. *ibid.*
3. *ibid.*
4. *The climatic information is detailed for seven recording stations in the Geraldton District in Environment Canada, Canadian Normals, Precipitation (1941 to 1970) (Downsview, Ontario, 1975)*
5. *ibid.*
6. *Ministry of Culture and Recreation, Prehistory and History of West Patricia: An Overview, 1979.*
7. *ibid*
8. *ibid.*
9. *ibid.*
10. *ibid.*
11. *ibid*
12. *ibid.*
13. *ibid*
14. *P.Driben and R.S.Trudeau, The Fort Hope Experience: Change, Adaptation and Freedom, Jan. 1976*
15. *Statistics Canada, 1971 Census*
16. *Source: Polar Gas Project, Volume V, Public Interest, Socio-economic Statement; Manitoba and Ontario*

A: introduction

Under the terms of the British North America Act (1867), subsequent amendments and acts of legislation, all lands, mines and minerals fall under the jurisdiction of the Province. As such, the Province of Ontario has the legislative authority for the management and sale of public lands belonging to the Province ... (BNA Act, 5.92). Under the authority of various acts (including the Public Lands Act, the Mining Act and the Lakes and Rivers Improvement Act) the management and disposition of public lands and waters has been assigned to the Ministry of Natural Resources.

The Lands and Waters Group of the Ministry of Natural Resources is responsible for achieving the Ministry's land management objective. This objective is:

to administer, protect and conserve public lands and waters; and to ensure with other agencies, through participation in planning and control, co-ordinated uses of lands and waters (1).

In the Geraldton District, Crown land comprises 96.9% of the total planning area. Land is held under various types of tenure including patent, lease, licence of occupation, or land use permit. Control of Crown land may be vested in authorities other than the Provincial government, for example, Federal or municipal governments.

B: water

1. INTRODUCTION

The interest in water is divided between many different groups including: the Ministries of Natural Resource, Environment, Health, and Agriculture

and Food; Ontario Hydro; and the Federal government (to name but a few). The Ministry of Natural Resources administers the Lakes and Rivers Improvement Act and is interested in water quality as it relates to fisheries management and water as a recreational medium (ie. canoe routes).

In the Geraldton District, 9.6% (10,523 sq.km) of the total area is covered by water.

2. WATERSHEDS

In the Geraldton District, 98.6% of the total area (108,534 square kilometers) is in the Hudson Bay primary watershed and 1.4% (1,541 sq,km.) lies in the Great Lakes primary watershed. Figure 11 shows the location of the primary, secondary and tertiary watersheds in the Geraldton District. The height of land separating the two primary watersheds is found in the extreme southern portion of the Geraldton District running parallel to Long Lake and includes the southwest and southeast corner to the District.

3. WATERBODIES

In the Geraldton District there are over 12,000 lakes greater than 10 hectares in size. Of this number, 145 lakes have had lake surveys conducted on them. The average size of the surveyed lakes is 1080 hectares

Lakes in the Geraldton District can be divided into the following three categories according to the materials which form their beds: 1) lakes in rough-rock areas; 2) lakes underlain by glacial drift; and 3) lakes underlain by marine clay deposits. Lakes in rough rock areas are usually characterized by low nutrient input, low concentrations of dissolved solids, low concentrations of phytoplankton species and consequently, low productivity. These lakes are often located along fault lines and usually exhibit a relatively greater depth per surface area than other lakes. Depth contours are determined by the bedrock structure.

Lakes underlain by lacustrine clay are generally shallower and exhibit high levels of turbidity during periods of increased wave action. They are more productive than rough-rock lakes.

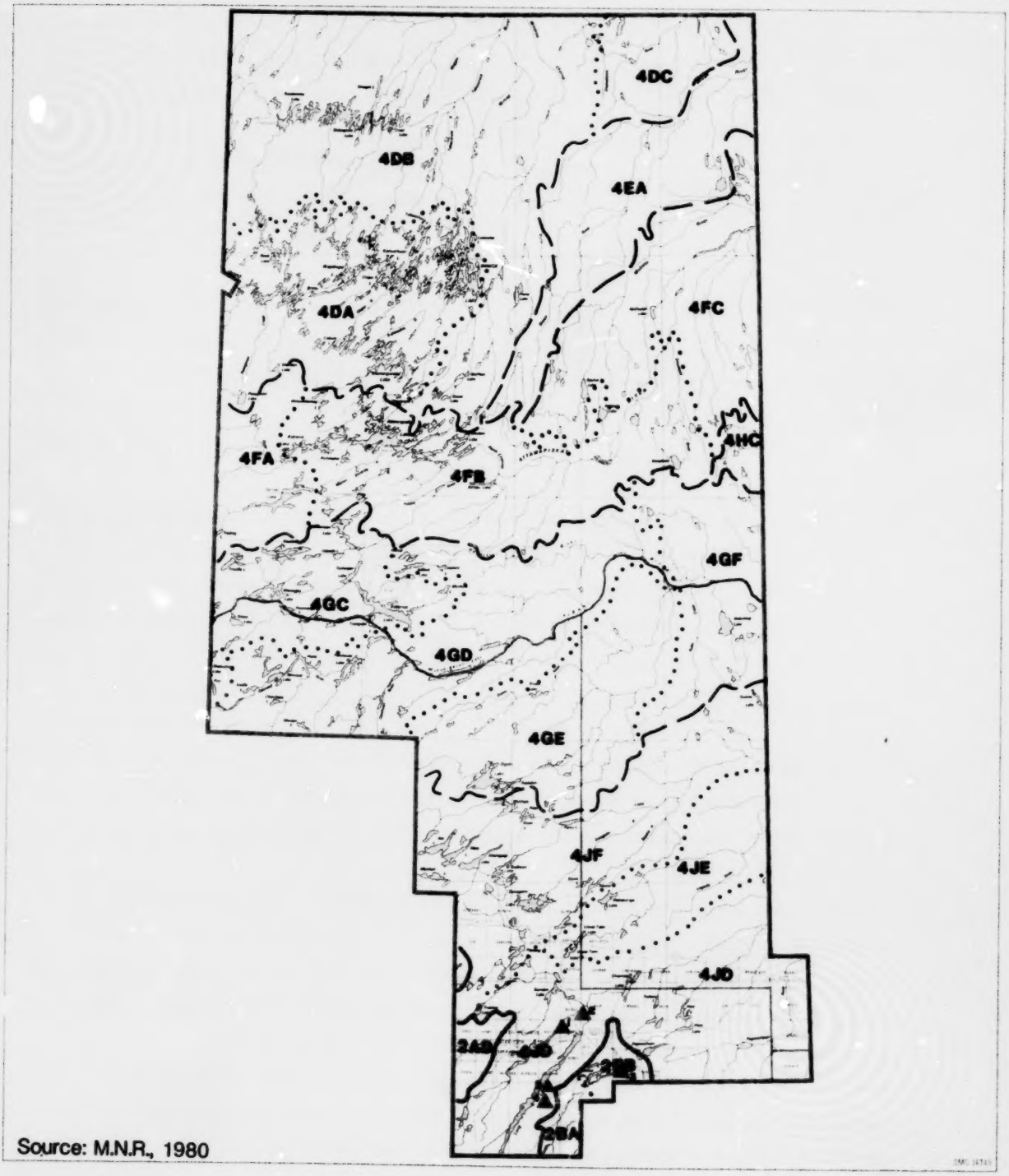
Lakes located on areas of glacial drift are generally shallower than tough-rock lakes and exhibit higher nutrient concentrations. In areas where glacial drift is thick and takes the form of drumlins or eskers, lakes occur in very irregular patterns.

Watersheds and Dams

Figure 11

LEGEND

- Primary Watershed Division
- Secondary Watershed Division
- Tertiary Watershed Division
- ▲¹ Kenogamisis Lake Dam
- ▲² Kenogami River Dam
- ▲³ McKay Lake Dam
- ▲⁴ Needle Creek Dam
- ▲⁵ Sweezey Creek Dam



Source: M.N.R., 1980

40 0 40 80 120 km
20 0 20 40 60 80 m

4. STREAMFLOW

Water courses in the Geraldton District range from the large rivers like the Winisk, Attawapiskat, Albany, and Ogoki River, to the intermediate sized rivers such as the Kawashkagama, Attwood, and Pagwachuan Rivers, to the numerous small bog drainages. 'The smaller summer streams are mainly short bog drainages, typically with mud and marsh banks, low gradients, and dark acid waters. Many have flows regulated by beaver dams. Some of the intermediate-sized watercourses have steeper gradients, forested banks, and alternating pools and gravel riffles. The largest rivers are fast flowing and relatively homogeneous in physical character ... within similiar physiographic regions (2)'. Peak flow usually occurs in May reflecting the period of snow melt and break-up. As a general rule rivers farther north experience their greatest flow in June as a result of a later snow melt and break-up date.

From May through September there is a progressive decline in the flow rates as a result of the higher rates of evapotranspiration during these months. The October and November rise reflects the lower evapotranspir - ation rates. During the remaining months streamflow is derived primarily from ground water and surface storage.

The seasonal pattern of run-off is fairly consistent throughout the planning area because major drainage systems span such substantial areas. Minor basins respond more quickly to seasonal changes in precipitation and evapotranspiration. Northern basins have a longer winter period dominated by baseflow, complemented by a short summer peak flow period.

5. GROUND WATER

Ground-water reserves in the Geraldton District are relatively small. The occurrence and characteristics of ground-water resources are controlled to a large extent by the major physiographic regions in the District.

On the Precambrian Shield Region (about 60% of the planning area), the best sources of ground-water are the coarser-grained overburden deposits, including eskers, outwash plains and moraines. Large ground-water supplies occur in till deposits due to the extensive area they cover, however, they are generally less efficient suppliers because they lack the depth. Ground-water also occurs in fractures in crystalline rock but the potential of this source varies widely. This source can be utilized when overburden deposits are too thin or of poor permeability to provide

an acceptable ground-water supply.

The mean transmissibility of aquifers consisting of over-burden deposits is low, about 500 gallons per minute (gpm). The mean transmissibility of wells in crystalline rock is generally very low, about 200 gpd/ft, which is barely enough for domestic use. Ground-water samples indicate generally potable water (3).

The Hudson Bay lowland region is underlain by Paleozoic strata, primarily limestone-dolomite and limestone/sandstone formations. Surficial material consists of moraine deposits of silt and clay with some occurrence of ground moraine composed of clay till. Bedrock aquifers are the most productive in this area because the surficial material is composed primarily of poorly permeable tills, clays and silts. The mean transmissibility of wells in limestone/dolomite rocks is 5,000 gpd/ft and individual wells may yield up to 200 gpm.

Ground-water is not widely used for human comsumption in the Geraldton District because of the abundance of good surface water. However, one individual is in the process of establishing a ground-water bottling plant. Production in the first year is estimated to be 966,000 litres (210,000 gallons) which would increase to 2,760,000 litres (600,000 gallons) by the third year.

6. WATER DIVERSIONS

There are three water diversions that have an effect on the Geraldton District: a) Long Lake Diversions to Lake Superior;

b) Ogoki diversion to Lake Nipigon; and

c) Lake St. Joseph - Root Portage Diversion to the Lake Winnipeg system.

The Long Lake diversion has the dual purpose of producing hydro-electric power and providing an economical means of transporting raw pulpwood to the mill at Terrace Bay. It involved the constructing of a dam on the Kenogami River (12 miles north of Longlac) to restrict northward flow to James Bay, the completion of a regulating dam at the south end of Long Lake to govern discharge to Lake Superior, and the excavation of a diversion channel to the Aquasabon River to breach the height-of-land. About 122,716 hectare-meters of water are diverted annually from the Kenogami River to Lake Superior.

Kimberly-Clark of Canada stockpiles 8 foot bolts on the ice at Longlac during the winter, and rafts it to Terrace Bay down Long Lake and through the Aquasabon River system. About 280,000 cords are shipped to the mill each year by this method.

Both the Ogoki and Lake St. Joseph diversions were constructed for hydro-electric power generation. The Ogoki diversion diverts 364,198 hectare-meters of water to Lake Nipigon from the Ogoki River system, annually. The Lake St. Joseph diversion diverts 230,864 hectare-meters of water annually to the Winnipeg River system from the Albany River.

In total, 717,778 hectare-meters of water are diverted annually from the Albany River system, 486,914 hectare-meters to Lake Superior and 230,864 hectare-meters to Lake Superior and 230,864 hectare-meters to the Winnipeg River.

7. WATER REGULATION

There are five dams located in the Geraldton District:

a) Kenogamisis River: for fisheries purposes and float plane use, controlled by Ministry of Natural Resources;
b) Kenogami River: part of the Long Lake diversion project mentioned above;
c) McKay Lake: to control the water supply on the Big Pic River to drive timber;
d) Needle Creek: built for speckled trout habitat management by Kimberly-Clark of Canada; and
e) Sweezey Creek: built for water storage purposes.

The location of these dams is shown on Figure 11 and Table 13 summarizes the information available on each.

TABLE 13: DAMS IN THE GERALDTON DISTRICT

Location	Length (m)	Height (m)	Water Height (m)	Condition	Purpose
Kenogamisis L.	50	4	2	Being Used	Lake level control for fishery and float plane base
Kenogami R.	46	12	-	Being Used	Hydro development, log driving
Needle Creek	24	5	3	Not Used	Speckled trout fishery
Sweezey Creek	55	2	1	Not Used	Water storage
McKay L.	18	1	.6	?	Water supply on Big Pic River for log drive

Source: MNR files

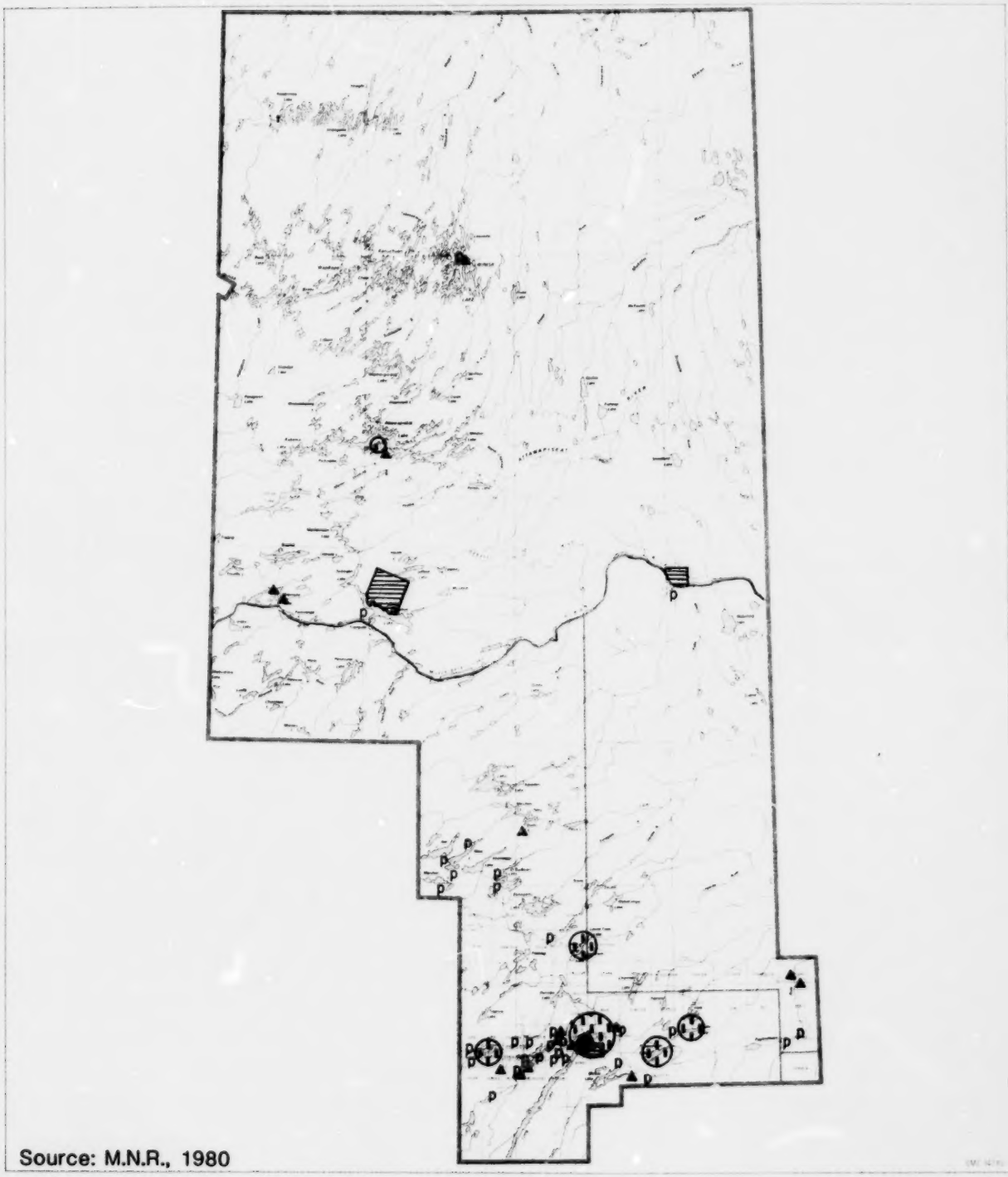
c:land tenure

1. FEDERAL CROWN LAND

Federal Crown Land is land held by the Federal Government for Her Majesty the Queen in right of Canada. The majority of Federal Crown Lands in the Geraldton District are Indian Reserves. These Reserves are established and set apart for Indian Bands by Treaty or through purchases by the Federal Government from the Province. Indian Reserves are not public lands and there are no Provincial rights associated with them. In the Geraldton District there are six Indian Reserves (see Table 14). It should be noted that Indian settlements like Aroland, Summer Beaver, Webequie and Lansdowne House are located on Provincial Crown Land (see Figure 12).

LEGEND

- Licence of Occupation
- Indian Reserve (Federal Crown Land)
- Small Indian Reserve
- Individual Patent Locations
- Number of Patent Locations



Source: M.N.R., 1980

40 0 40 80 120 km

20 0 20 40 60 80 m

TABLE 14: INDIAN RESERVES IN THE GERALDTON DISTRICT (1978)

Indian Reserve	Area (Hectares)
I.R. #58 (Longlac)	215
I.R. #64 (Fort Hope)	25,600
I.R. #65 (Marten Falls)	7,680
I.R. #77 (Longlac)	6,913
I.R. #83 (Aroland)	less than 1ha.
Kasabonika	10,681
TOTAL	51,089

2. PROVINCIAL CROWN LANDS

Provincial Lands are referred to as either Crown or Public lands. At present, no authority for the use of unposted Crown land is required from the Ministry of Natural Resources for short term transient activity such as hiking, canoeing, and fishing. When Crown land is occupied for private recreational purposes such as by tent, tent trailer or houseboat, there is a limitation of three weeks per year after which time the individual must apply to the District Manager of the Ministry of Natural Resources for authority to occupy Crown Land. This authority may or may not be granted depending on the location and circumstances.

Further, under the authority of the Public Lands Act, the Ministry of Natural Resources may reserve Crown Land for the use of the public or for Ministry purposes. These Crown reserves, along with Provincial Parks, are considered as Provincial Crown lands (see Table 15).

The Geraldton District has three Provincial Parks totalling 168,399 hectares, and 38 Crown Reserves totalling 54,199 hectares (see Figure 13).

3. LAND USE PERMITS

The land use permit grants the right to use the land for a specific purpose and a limited period of time, not in excess of one year. It authorizes land uses which are expected to be of very short duration or should, from a land management point of view, be subject to review. Table 16 shows the number of land use permits issued in the Geraldton District, grouped according to use. The total amount of land under land use permit

is 116 hectares.

TABLE 15: EXISTING CROWN RESERVES AND PROVINCIAL PARKS

Crown Reserves	Number	Area (Hectares)
1) Forestry Reserves	3	24
2) Park Reserves	8	51,391
3) Access Points	8	32
4) Other	19	2,752
TOTAL	38	54,199
Provincial Parks		
1) Klotz		89
2) McLeod		81
3) Winisk Wild River		168,220
TOTAL		168,390

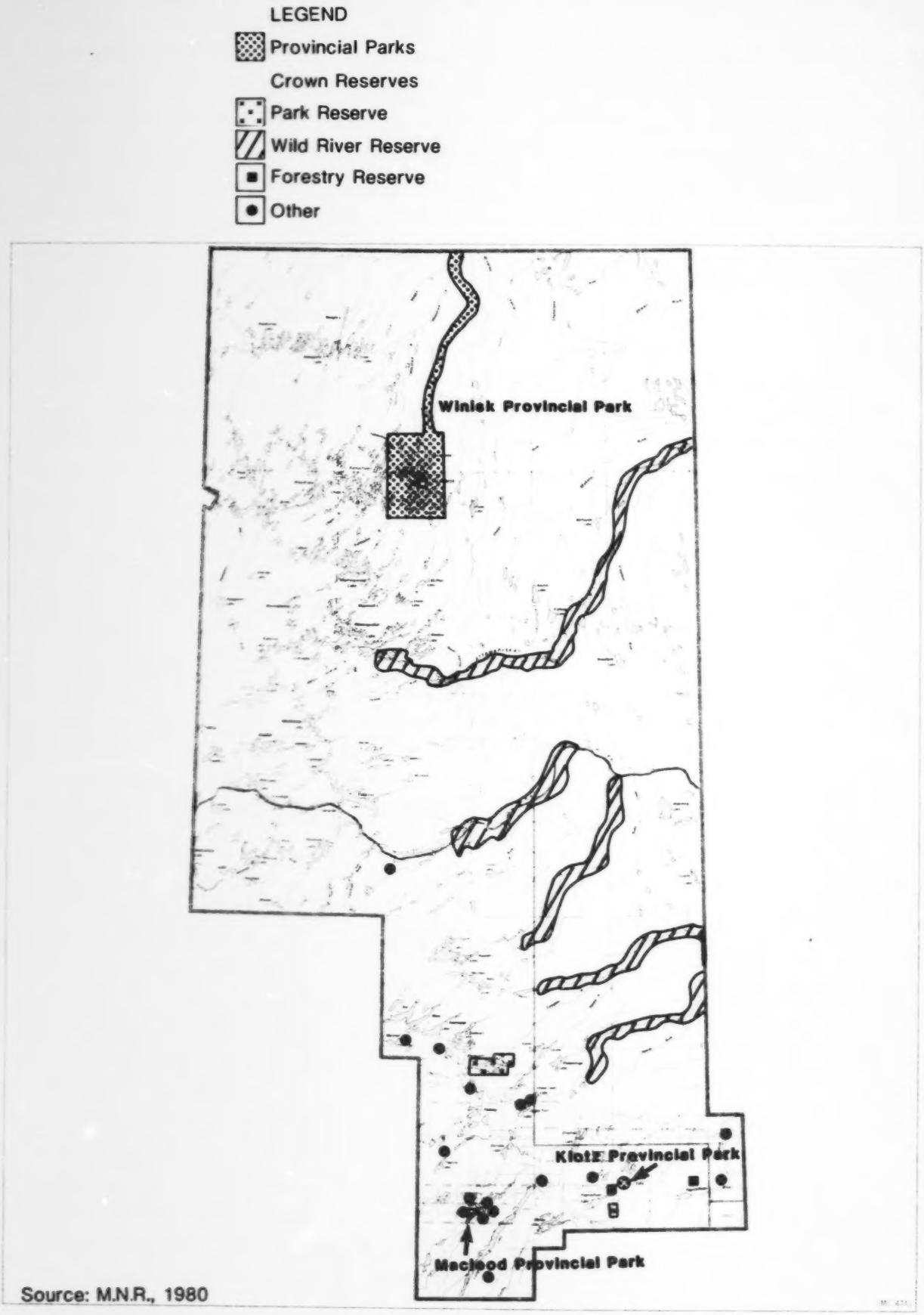
Source: MNR files

TABLE 16: LAND USE PERMITS (BY USE) IN THE GERALDTON DISTRICT (1979)

	Number	% of Total	Area* (Hectares)
Outpost Camps	171	60.1	69
Remote Cottage	10	3.5	4
Residential	50	17.5	20
Private Hunt and Fish Camps	9	3.2	4
Commercial Fish Camps	4	1.4	2
Other (docks, disposal grounds, signs misc.)	41	14.4	17
TOTAL	285	100%	116

Source: MNR files
** assuming an area of 1 acre per land use permit*

Geraldton District Parks and Crown Reserves Figure 13



4. LICENCE OF OCCUPATION

A licence of occupation (L.O.) permits the use of a defined area of public land for a specified purpose for an undefined length of time. A licence is subject to cancellation at the request of the licencee or at the pleasure of the Crown. Licences are used, therefore, in cases where the length of time for which the authority will be required is not readily ascertainable.

In the Geraldton District, 98.5% of the area covered by licences of occupation are associated with mining activity (see Table 17). This figure includes mining claims covered by water, the proposed iron ore slurry pipeline from Melchett Lake to Kama Bay on Lake Superior, and a proposed tailing are south of Geraldton. The second largest licence holder is Kimberly-Clark of Canada which has 11 L.O.'s covering their booming grounds on Long Lake, tree nursery facilities and other forestry-associated uses (see Figure 12). Other uses include water lots, commercial tourist operations and community service facilities.

TABLE 17: LICENCES OF OCCUPATION BY USE IN THE GERALDTON DISTRICT (1979)

	Number	Area (Hectares)	% of Total Area
Residential	2	1	.002
Community Service Facilities	2	1	.002
Mining	N/A	34,508	98.5
Commercial Tourist	2	4	.010
Other (dams, road locations, etc.)	3	3	.008
Forest Industry Operations	11	520	1.5
TOTAL	20	35,037	

Source: MNR files

5. LEASES

A lease is a form of tenure whereby land is disposed of for a specified period of time and specified purpose. Leases are most often issued for various commercial purposes, mining and cottaging. Table 18 shows the breakdown, by use, of Crown leases in the Geraldton District.

In the Geraldton District, there are 335 mining leases covering 5577 hectares. The holder of a valid prospector's licence may stake claims on Crown lands which are declared open to staking under the Mining Act. A staked claim, when recorded in the Mining Recorder's Office, allows the holder to determine the mineral potential of the claim. The number and location of mining claims change over time as new claims are staked and old ones cancelled.

At the present time (1980) there are about 1,300 staked claims covering 21,000 hectares in the Geraldton District (see Figure 14).

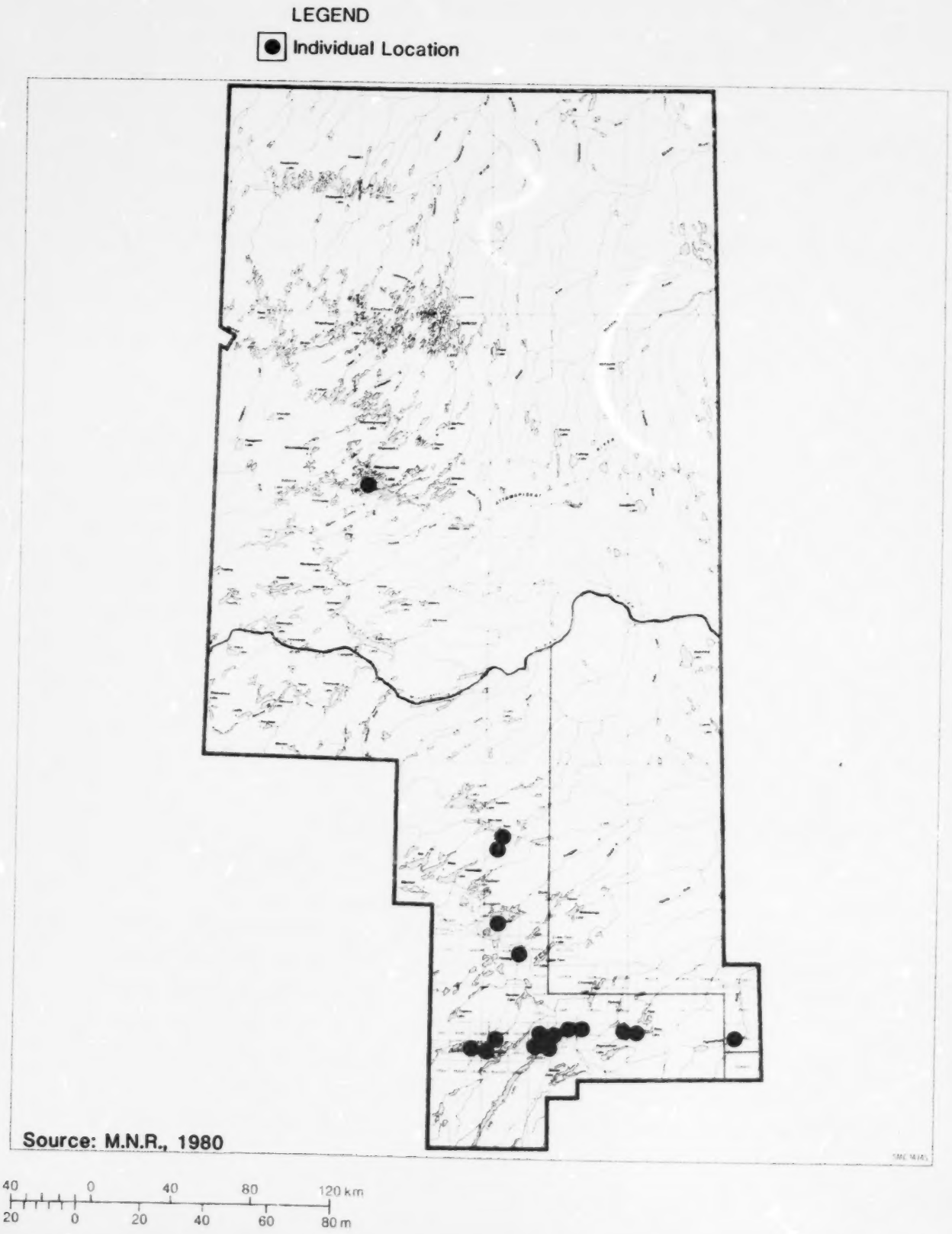
The remaining number of Crown leases cover less than 1% of the area under lease. They were issued for the purposes of cottaging, communications facilities, timber operations, tourist establishments and other uses.

Some leases may contain an option to purchase upon fulfillment of improvement requirements and payment of a purchase price. This is currently happening in the case of cottaging for which leases were granted between 1971 and 1978 in registered plans of subdivision. Cottaging will be discussed more fully later in the report.

TABLE 18: CROWN LEASES BY USE, IN THE GERALDTON DISTRICT, 1979.

	Number	% of Total	Area (Hectares)
Cottaging	83	19.4	28
Mining	335	78.5	5577
Tourist establishments	2	.5	4
Communications Facilities	3	.6	2
Timber Operations	2	.5	1
Other	2	.5	1
TOTAL	427	100	5613

Source: MNR files


LEGEND
Individual Location
Source: M.N.R., 1980
40 0 40 80 120 km
20 0 20 40 60 80 m

6. PATENTED LANDS

Letters patent are documents signed by the Lieutenant Governor, under the Great Seal of the Province of Ontario on behalf of the Crown granting rights in the land (4). Table 19 shows the number and area by original intent of patent for patented lands in the Geraldton District (see Figure 12).

Most patented land (95.5%) was granted for mining purposes. The second greatest use by area is for permanent residences (3.3%). The remaining uses include: seasonal residental; commercial utilities; and other uses (eg. schools churches, etc.)

TABLE 19: PATENTED LANDS BY ORIGINAL INTENT OF PATENT, GERALDTON DISTRICT, 1979

	Locations	Area (Hectares)	% of Total
Mining	760*	12,183	95.5
Commercial Tourist	19	68	.5
Seasonal Residential	139	40	.3
Permanent Residences	10	420	3.3
Commercial Utilities (pipelines, hydro, telephone etc.)	5	42	.3
Other (schools, churches, etc.)	7	7	.1
TOTAL	940	12,760	100

Source: MNR files
** assuming 40 acres per claim*

7. ORGANIZED MUNICIPALITIES AND PLANNING AREAS

The previous discussion has not included land in organized municipalities or land included under an Official Plan. In the Geraldton District, there are three areas that fall into this category:

a) the Geraldton and Suburban Planning Area: the planning area is covered by an Official Plan. This includes the Town of Geraldton and the townships of Ashmore, Errington, Fulford and McQuestern. The town of

Geraldton is covered by a comprehensive zoning by-law while the unorganized portion of the planning area is covered by a Ministry of Housing zoning order;

b) the Township of Longlac is covered by a comprehensive zoning by-law; and

c) the Township of Nakina is covered by a comprehensive zoning by-law.

These municipalities comprise an area of 63,616 hectares of which 74.3% of the area is Crown land and 25.7% is alienated (see Table 20).

8. LAND TENURE SUMMARY

Table 21 summarizes the land tenure in the Geraldton District. Of a total land area of 11,007,500 hectares, 3.1% is under some form of land tenure. Provincial lands accounts for the largest portion, 2.0%. Federal Crown lands and alienated lands comprise .5% each and aliented land in organized municipalities and planning areas accounts for .1%.

TABLE 20: LAND TENURE IN MUNICIPALITIES IN THE GERALDTON DISTRICT, 1979

	Total Area (ha)	Land Use Permits (ha)	Licences of Occupation (ha)	Crown Leases (ha)	Patent (ha)	Total Alienated Lands(ha)	Crown Land (ha % of Total
Geraldton and Suburban Planning Area	37,325	3	1,538	147	7,485	9,173	28,152(75.4
Township of Longlac	1,426	1	2	1	480	484	942(66.1
Township of Nakina	24,865	4	118	2	596	720	24,145(97.1
TOTAL	63,616	8	1,658	150	8,561	10,376	53,240(74.3

Source: MNR files

TABLE 21: LAND TENURE SUMMARY FOR THE GERALDTON DISTRICT, 1979

Land Tenure	Area (Hectares)	% of Total
A. Federal Crown Land	51,089	.5
B. Provincial Land		
B.1.) Crown Reserves	54,199	2.0
B.2.) Provincial Parks	168,390	
Total	222,589	
C. Alienated Land		
C.1.) Land Use Permits	116	
C.2.) Licences of Occupation	35,037	
C.3.) Leases	5,613	
C.4.) Patent	12,760	.5
Total	53,526	
D. Municipalities		
D.1.) Alienated Land	10,376	.1
Total Land Under Tenure	337,580	3.1
Total Crown Land	10,669,920	96.9
TOTAL	11,007,500	100

Source: MNR files

D:cottaging

1. INTRODUCTION

The first Crown cottage lot was disposed of in 1935 on Cordingley Lake. Little interest in cottage development was shown until after World War II when disposition occurred on Kenogamisis, Wildgoose, Klotz, Pagwachuan, Lower Twin and Pamela Lakes between 1950 and 1962. Disposition was all by patent. Between 1962 and 1970, little happened in the way of cottage

development.

In 1971, the Ontario Government instituted a cottage development program with disposition occurring by lease only. This led to the preparation and subsequent implementation of several lake development plans for cottaging development. In 1975, the remote cottaging program was introduced. Remote cottages were of two types: 1) lots fronting on lakes; or 2) inland sites. Sites were to be located at least 1.6km (1 mile) from other shoreline developments and land tenure was to be lease or land use permit. In 1978, the Ontario government allowed the purchase of cottage lots (except remote sites) and the conversion from lease to patent for those sites leased between 1971 and 1978. Disposition of new lots could be to Ontario residents only, in the first year (that the sites were opened), Canadian residents in the second, and American residents in the third year. Non-residents can purchase lots or lease remote sites.

2. EXISTING DEVELOPMENT

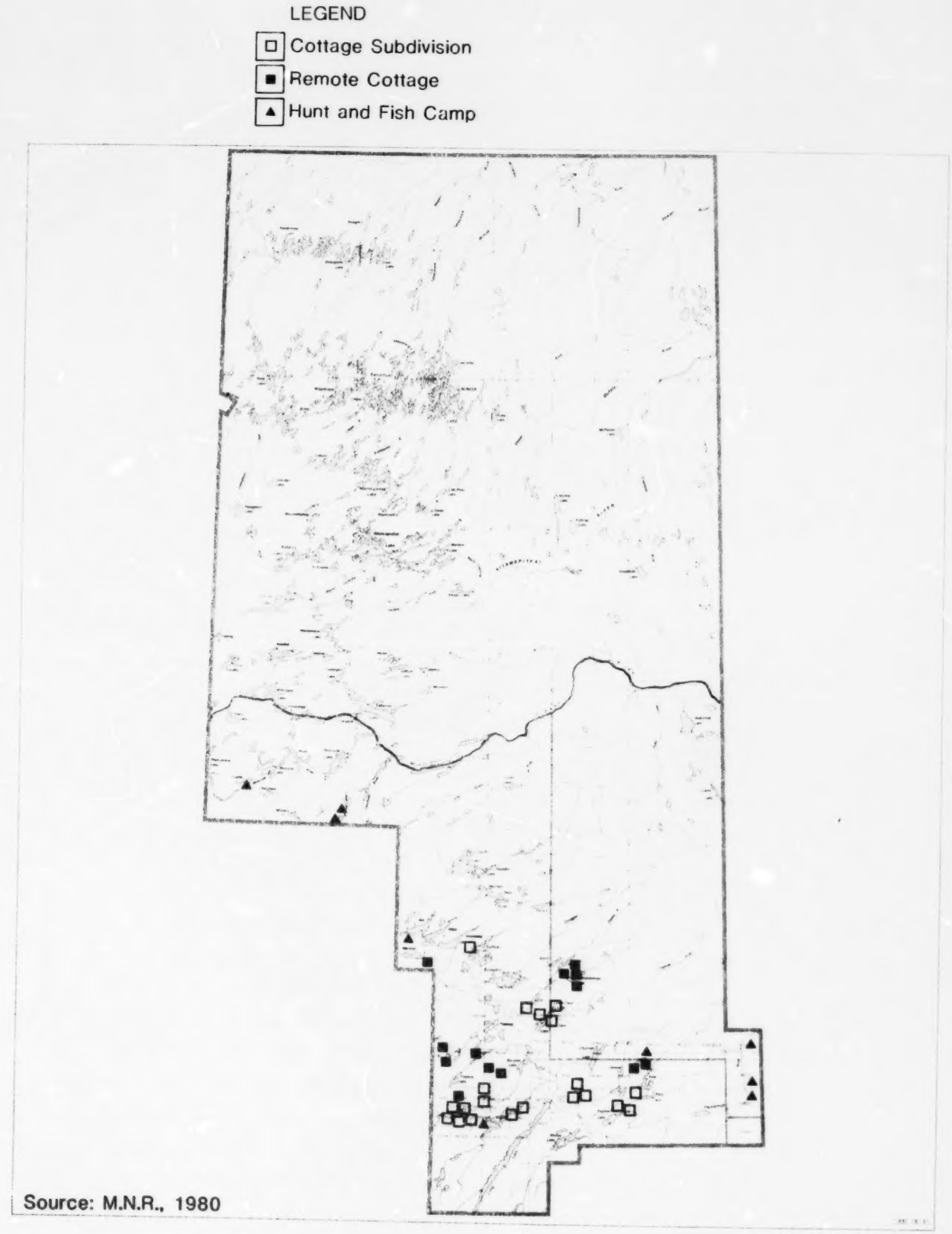
In the Geraldton District there are a total of 356 cottage lots under some form of tenure to individuals. Table 22 shows the breakdown by type of cottage development. The greatest number (275) are located in 20 registered plans of subdivision on 10 different lakes.

Figure 15 shows the location of the cottaging developments in the District.

TABLE 22: COTTAGING BY TYPE IN THE GERALDTON DISTRICT, 1980

Type	Number	% of Total
Registered Plan of Subdivision	275	77.2
Individual Surveyed Locations	51	14.3
Remote Cottages	10	2.8
Private Hunt and Fish Camps	9	2.6
Severed Mining Claims	11	3.1
TOTAL	356	100.0

Source: MNR Files


LEGEND
Cottage Subdivision
Remote Cottage
Hunt and Fish Camp
Source: M.N.R., 1980
40 0 40 80 120 km
20 0 20 40 60 80 m

Individual surveyed locations are generally older locations, selected by private individuals and patented for cottage development. Private hunt and fish camps were the precursor to the current remote cottage site. Locations were selected by the individual and tenure was by land use permit. The program was discontinued about 1970. Severed mining claims refers to locations obtained by private individuals, under patent, through the severance of mining claims. All current registered plans of subdivisions and remote cottage sites are determined through the preparation of lake development plans. Table 23 shows the status of the lake development plans for Crown cottage subdivisions totalling 210 lots. There are seven lake development plans for remote cottage lots. All of the 17 proposed lots have been opened for disposition. Information on particular locations and current state of disposition can be acquired at the Geraldton District office.

TABLE 23: STATUS OF APPROVED LAKE DEVELOPMENT PLANS IN THE GERALDTON DISTRICT, 1980

Lake Development Plan	Number of Additional Lots	Plans for Disposition
A. Subdivision		
Cordingley	47	No immediate plans
Klotz	0	No further development
Lower Twin	46	Open for disposition
Castlebar	75	No immediate plans
Wildgoose	42	Disposed of
TOTAL	210	

Source: MNR Files

3. PRESENT USE AND ECONOMIC IMPACT

From the total of 356 cottages in the Geraldton District, 80.3% (285) are owned by Ontario residents, 18.8% (67) are owned by United States residents and .9% are owned by other Canadian residents. Assuming an average of 200 user days per year (for both resident and non-resident owners, and all types of cottaging), a total of 71,200 user days per year can be attributed to cottaging in the Geraldton District.

Estimates of annual expenditures on cottaging are made using a figure of $300. per cottage plus $2.50 per user day(5). The estimated expenditures using these figures are $284,800 per year.

4. COTTAGING POTENTIAL

The Ministry of Natural Resources has guidelines for determining the suitability and capacity of lakes for cottage development. Therefore, an estimate of the cottaging potential of the District can be made. Several institutional constraints must also be imposed to make the assessment realistic; for example, lakes must not be greater than 8km from a major road due to the cost of construction. With all these constraints considered, the Geraldton District has a potential of 3,232 cottage lots. A more detailed explanation of the calculations is available at the Geraldton District office.

E:agriculture

1. PRESENT DEVELOPMENT

There is very little agricultural development in the Geraldton District. The few commercial operations that do exist supply the local market with a limited amount of produce. They are generally part-time hobby gardening operations used to supplement the family income. There is one commercial greenhouse operation located in Geraldton.

2. POTENTIAL

There is little likelihood that commercial agriculture will become a viable enterprise in the Geraldton District in the near future. There is no Canada Land Inventory, Soil Capability for Agriculture mapping for the area so the productive capability of the soil cannot be discussed. However, general observations indicate that there are severe soil and climatic limitations

Gardening will continue to be carried out by individuals who wish to supplement their food supply with fresh produce. It is possible that

technological developments with fast growing hybrids and greatly increased transport costs could alter the viability of commercial agriculture in the area. However, this is not foreseen in the near future.

F:sensitive areas

1. DEFINITION

Sensitive areas are areas of land and/or water that contain features whose protection is advocated by some individual or group. The area of land and water which is necessary to sustain the feature is considered to be part of the sensitive area. The concern for the feature generally relates to one or more of the following:

1) scientific research:
2) education and interpretation; or
3) preservation/conservation of unique or representative occurrences of flora, fauna, land forms, geological, historical, or cultural features.

2. IMPORTANCE IN LAND USE PLANNING

Sensitive areas may be important for the achievement of program objectives of the Ministry of Natural Resources or other government ministries. They may also be important to groups or individuals as educational, recreational, or aesthetically pleasing areas. Consequently, it is important to have an inventory of these areas so that they can be given consideration during the preparation of the land use plan. With an assessment of the relative importance of individual sensitive areas, objective decisions concerning trade-offs between competing uses can be made if conflicts arise.

3. SENSITIVE AREAS IN THE GERALDTON DISTRICT

Sensitive areas in the Geraldton District include: heronries; bald eagle and osprey nests; yellow pickerel spawning areas; lake trout lakes and speckled trout streams; gull and tern breeding colonies; waterfowl habitat; vegetative features; and sites of geological importance.

Figure 16 shows some of the sensitive areas in the District. Archaeological sites are not shown; the number of identified sites is estimated to be between 300 and 400. The total number of sensitive areas of other types is about 150.

Notes: *(1) Towards the 80's, A Guide to the Organization and Management System, Ontario Ministry of Natural Resources (February, 1979), p.2.*

(2) C. T. Hatfield, G.R. Peterson, Wm. Bengeyfield, G.L.Williams and G.M.Smith, Survey of Selected Living Aquatic Resources Along the Proposed Polar Gas Pipeline Route from Spence Bay, N.W.T. to Longlac, Ontario, 1976 Volume 1, prepared for Polar Gas Project, (March 1977), p.70.

(3) K.T.Wand and V.I.Chin, Northern Ontario Water Resources Studies, Ground-Water Resources, Ministry of Environment, Water Resources Branch (Toronto, Ontario, 1978).

(4) In Law, three rights are associated with patented land: (1) land surface rights (2) mineral rights, and (3) timber rights. Surface rights refer to every right in land other than mineral rights. Mineral rights refer to the ores, mines, and minerals on or under the land. A grant may be made for mining rights only, surface rights only, or both. Crown grants of timber rights are made by Crown Timber Licence, under the authority of the Crown Timber Act. Crown timber licences convey no interest in the land.

(5) Ontario Ministry of Natural Resources, Crown Land Recreation Study, Phase 1 - The Status Quo, prepared by Hough, Stansbury & Associates Limited with Jack B. Ellis and Associates Limited (June, 1977),pp.40

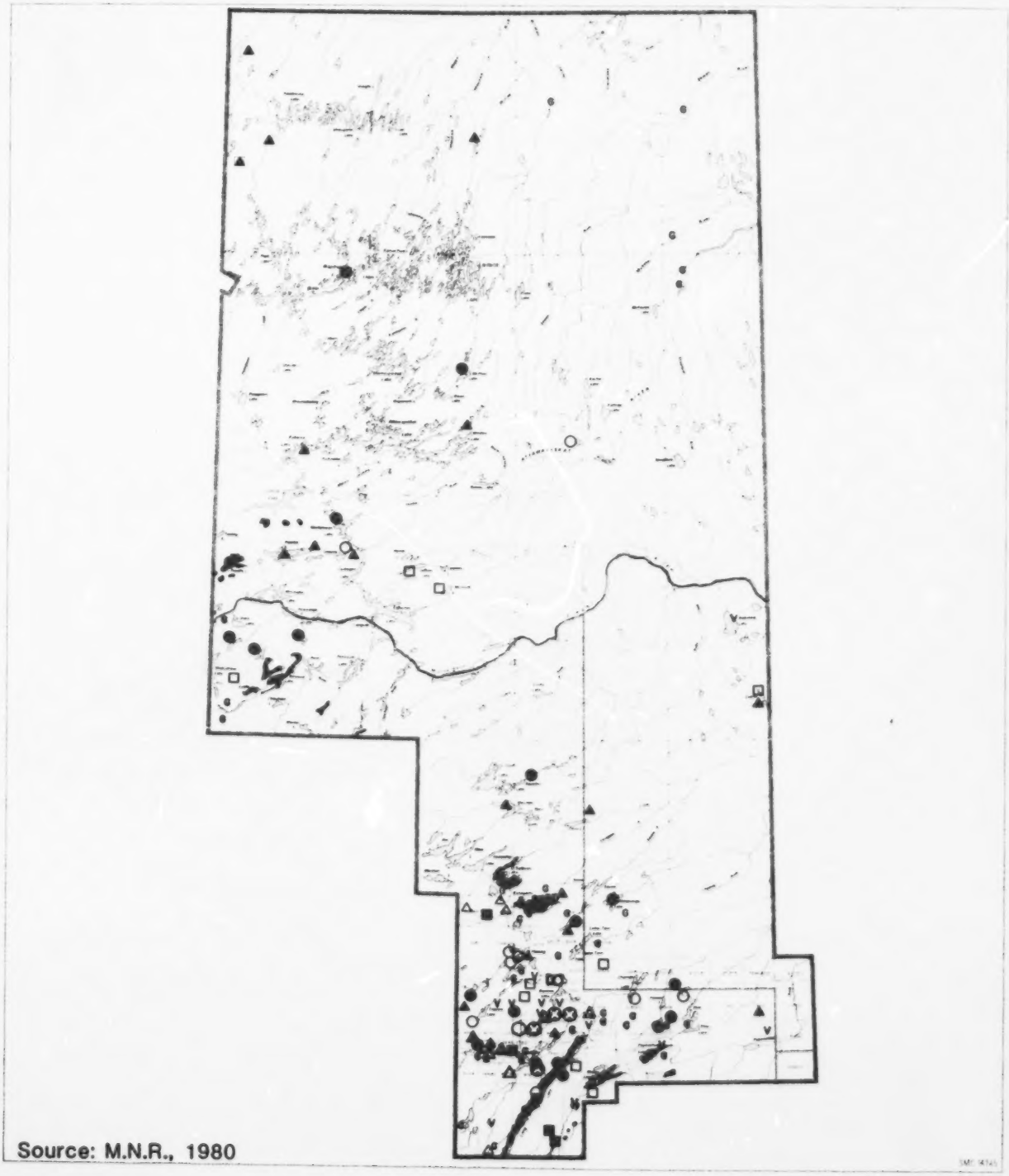
(6) Ontario Ministry of Natural Resources, "A Discussion Paper on a Sensitive Areas Policy and Procedure", June 1980.

Sensitive Areas

Figure 16

LEGEND

- Eagle
- Osprey
- Heron Colony
- Vegetation
- Recreation
- Lake Trout Lake
- Trout Stream
- Gulls, Terns and Others
- Waterfowl Breeding and Banding Area
- Geology and Landforms
- International Biological Program Site
- Yellow Pickerel Spawning Area



Source: M.N.R., 1980

40 0 40 80 120 km

A:introduction

The objective of the Outdoor Recreation Program is:
To provide from public lands and waters and to encourage on other lands and waters:
A wide variety of outdoor recreational opportunities accessible to and for the continuous benefit of the people of Ontario;

The identification and conservation of unique or representative physical biological, cultural and historical features of the province;

A continuous contribution to the economy of Ontario from tourism and its related industries (1).

The Ministry of Natural Resources is directly involved in the provision of outdoor recreation opportunities through:

1) the Provincial Parks program;
2) the provision of Crown land recreation opportunities, for example:
   i) canoe routes;
   ii) cross country skiing, snowmobiling and hiking trails;
   iii) swimming and boating opportunities; and
   iv) camping opportunities;
3) our involvement with the commercial tourist industry;
4) the sport fishing program; and
5) the big and small game hunting programs.

B:provincial parks

1. INTRODUCTION

Provincial parks represent significant and distinctive natural, cultural, and recreational environments, dedicated for all time to the people of Ontario and others who may use them for their healthful enjoyment and appreciation. More specifically, provincial parks are intended to:

- provide a wide variety of outdoor recreation opportunities, ranging from high intensity day use to low intensity wilderness experiences (recreation role);
- protect provincially significant elements of the natural and cultural landscape of Ontario (protection role);
- provide opportunities for the exploration and appreciation of the outdoor natural and cultural heritage of Ontario (heritage appreciation role); and
- facilitate travel by residents of and visitors to Ontario who are discovering and experiencing the distinctive regions of the province (tourism role).

As such, provincial parks represent much more than simple campgrounds and beaches. However, no individual park can be all these things, at the same time, to all people. Recognizing this limitation, six broad types or classes of provincial parks have been formalized, each with fundamental and clearly recognizable characteristics and purposes.

Ideally, a visitor will approach a classified park with some idea of what to expect and what not to expect. The six park classes and basic roles of each are described as follows:

Wilderness Park: "Wilderness Parks are substantial areas where the forces of nature are permitted to function freely and where visitors travel by non-mechanical means and experience expansive solitude, challenge, and personal integration with nature."

Nature Reserves: "Nature Reserves are areas selected to represent distinc-

tive natural habitats and landforms of the Province, and are protected for educational purposes and as gene pools for research to benefit present and future generations."

Historical Parks: "Historical Parks are areas selected to represent the distinctive historical resources of the Province in open space settings, and are protected for interpretive, educational, and research purposes."

Natural Environment Parks: "Natural Environment Parks incorporate outstanding recreational landscapes with representative natural features and historical resources to provide high quality recreational and educational experience."

Waterway Parks: "Waterway Parks incorporate outstanding recreational water routes with representative natural features and historical resources to provide high quality recreational and educational experiences."

Recreation Parks: "Recreation Parks are areas which support a wide variety of outdoor recreation opportunities for large numbers of people in attractive surroundings."

The provincial park system should not, however, be viewed as satisfying all outdoor recreation and tourism needs in the Province and protecting all significant natural and cultural features. It is the specific role of the park system to ensure a basic supply of recreation and tourism opportunities (eg. day use, car-camping, and back-country) to all Ontario residents and visitors, and to assure a base level of protection for provincially significant earth science, life science, and cultural resources throughout the Province. Beyond this service, other delivery agencies (eg. municipalities, private sector, federal government, etc.) have a very definite and equally important role to play in the provision of recreation and tourism opportunities and in the protection of our natural and cultural heritage and diversity.

2. EXISTING DEVELOPMENT

There are three Provincial Parks in the Geraldton District. Table 24 shows the area, classification, season length, and level of service offered by each park. The locations of the parks are displayed in Figure 13.

Both Klotz and MacLeod Park are located on Highway 11, Klotz Park being 48 kilometers east of Longlac and MacLeod Park 10 kilometers east of Geraldton. The intent of these two recreational parks is to provide recreation picnicking areas and services for intensive vehicle camping.

Winisk Wild River Provincial Park is 319 km, north of Nakina and accessible only by air. It extends from Winisk Lake to the Hudson Bay coast. The purpose of the park is to incorporate into the parks system, outstanding recreational water routes with representative natural features and historical resources that provide high quality recreational and educational experiences. The village of Webequie, including the new airstrip constructed by the Ministry of Transportation and Communications are exempted from the park.

In addition to the provincial parks there are numerous park reserves. These areas are set aside pending the decision on official park status if demand warrants it. They are as follows (refer to Figure 13):

- Esnagami Lake
- Lukinto Lake
- Purgatory Chute
- Attawapiskat River (part)
- Albany River (part)
- Ogoki River (part)
- Little Current River (part)
- Drowning River (part)

3. PRESENT USE

Campers at MacLeod and Klotz Lake Parks are primarily travellers who are camping overnight while enroute to other destinations. MacLeod Park has a greater component of its camping use attributable to local people because of its proximity to Geraldton. This is also reflected in the day use figures which show day use at Klotz Lake Park is almost nil while day use at MacLeod Park is over 2,500 user days per year (see Table 25). Total camping use in the two parks was 15,018 camper nights in 1979. Occupancy rates for Klotz Lake and MacLeod Parks in 1979 were 37% and 41% respectively.

Winisk Wild River Park is a destination park, that is, visitors are travelling to the park instead of passing through. There are no statistics on the use of Winisk Park. Visitors are of two types, canoeists and fishermen. The Winisk River is one of Ontario's finest wilderness canoe routes (level of use is not known). The river and lake also offer excellent fishing and this advantage is being utilized by the residents of Webequie who operate tourist facilities within the park.

TABLE 24: PROVINCIAL PARKS IN THE GERALDTON DISTRICT

Park Name	Area (ha)	Classification	Services Offered	Season Length (days)
Koltz	85	Recreational	30 tent and trailer sites	96
MacLeod	81	Recreational	85 tent and trailer sites	96
Winisk	173,597	Waterway	No maintained campsites Interio shoreline camping	no established schedule

Source: MNR files

4. POTENTIAL FOR EXPANDED USE.

Guidelines established for MacLeod and Klotz Lake Parks have established the maximum number of daily campers and day users that can be accommodated (based on safety, environmental protection, and visitor enjoyment).

Klotz Lake Park does not have any capacity to provide day-use recreation. It has the potential to increase its camper use by 1760 user days per year. MacLeod Park has the potential to increase its day users and camping users by 4122 user days and 886 user days respectively.

TABLE 25: PARK USE IN THE GERALDTON DISTRICT, 1979

Park	Day Use (User Days)	Camping Use (camper nights)	Occupancy Rate (%)
Klotz	6	3,424	37
MacLeod	2,598	11,594	41
TOTAL	2,604	15,018	

Source: MNR files

There is no user information for Winisk Wild River Park so the calculations cannot be made. However, it appears unlikely that the park recieves

an amount of use close to the maximum potential. The establishment of an airport at Webequie serves to make it more accessible, however, a large increase in use is not anticipated.

5. CAPABILITY

A process called "regional parks system planning" has been initiated to determine what additions are required to the parks system to meet the four policy objectives (e.g. recreation, protection, heritage appreciation and tourism), and to identify where and how the gaps in the system can be overcome. The first step in the process is to determine the contribution of the existing parks and park reserves to achieving the objectives of the parks system plan.

a. Protection and Heritage Appreciation Objectives

MacLeod and Winisk parks contribute to the 'protection and heritage appreciation' objectives:

1) Winisk Waterway Park: within the park are earth and life science feature representative of the geological history and biophysiographic diversity of the Province of Ontario. In addition, there are several archaeological sites which may represent certain historical themes or theme segments;
2) MacLeod Provincial Park: there is a site depicting one historical theme and theme segment, that of the shield archaic people of the boreal forest.

Of the existing park reserves, only Lukinto Lake Park Reserve makes a significant contribution to the earth and life science targets.

To meet the 'protection and heritage appreciation' objectives of the parks system plan, additional parks within the Geraldton District will be required.

b. Recreation and Tourism Objectives

The demand for day use opportunities within provincial parks in the Geraldton District is presently estimated at 5,500 opportunities per annum, increasing to 6,100 opportunities by 2001. The present parks system supplies 22,100 day use opportunities per annum so no further resources are required.

The demand for car-camping opportunities is presently estimated to be 35,100 opportunities per annum, increasing to 40,700 opportunities by 2001. The present park system supplies 26,700 car-camping opportunities,

leaving a net deficit of 8,400 opportunities. Consequently, additional car-camping opportunities will need to be supplied in the parks system in the Geraldton District.

The Lukinto Lake Park Reserve is the only park reserve in the Geraldton District which has a potential to supply additional day use and car-camping opportunities. It has the capability to supply 24,000 day use and 40,000 car-camping opportunities per annum.

There are no back-country recreation (eg. canoeing) targets for the Geraldton District. However, when they are provided it is expected that they will be achieved through the waterway park class designation. At present, Winisk Park provides 1,728 opportunities per annum. The existing park reserves (portions of the Albany, Attawapiskat, Ogoki, Little Current and Drowning Rivers) will be instrumental in providing additional back-country recreation opportunities.

C:crown land recreation

1. INTRODUCTION

Crown land recreation consists of two components, unstructured and structured recreation. Structured recreation refers to the provision of facilities or designated routes. Unstructured recreation refers to recreation requiring no facilities.

This portion of the background report will deal only with camping, boating, canoeing, hiking, snowmobiling, cross-country skiing, and berry picking. Sport fishing and hunting will be dealt with in more detail later in the report.

2. SUPPLY OF CROWN LAND RECREATION FACILITIES

Participation in some Crown land recreation activities requires the construction or maintenance of certain facilities (for example, hiking requires hiking trails). The Ministry of Natural Resources constructs

and/or maintains many of these facilities to the degree that budgets and manpower permits. Table 26 lists the unit of measure, facility supply and potential use by recreational activity. Figures 17 and 18 show the location of some of these facilities.

Note that the snowmobile trails used by local trappers from Ogoki Post to Nakina and Ogoki Post to Fort Hope are not included in the supply calculation. The reason for this is that they are not generally used by recreationists.

3. EXISTING USE

There are no use estimates for boating, swimming, canoeing, trail use (skiing, hiking, snowmobiling), or berry picking that occurs in the Geraldton District. However, the following generalizations can be made:

i) most of the participation in the above-mentioned activities (possibly with the exception of canoeing) is by local people;

ii) it is very difficult to separate boating and canoeing from sport fishing that is, most boating and canoeing is associated with sport fishing as the primary purpose;

iii) hiking (back packing) as an activity is almost non-existant in the Geraldton District; and

iv) most snowmobiling occurs off of the designated trails while most cross country skiing occurs on the designated trails.

A major difficulty involves the separation of camping use from camping that is associated with hunting and fishing. Additional problems result from lack of data covering weekend use of Crown land and assessing the amount of interior camping (away from road access) that takes place.

The Crown Land Recreation Survey carried out in 1980 showed that 96% of those surveyed were interested primarily in fishing. Only 28% listed both camping and fishing as their primary purpose. This latter group accounts for about 23,950 camper nights on Crown land per season.

4. POTENTIAL FOR CROWN LAND RECREATION

Two aspects of potential to be addressed are: 1) the potential for use (present supply/demand situation); and 2) the physical potential of the district to provide more recreational opportunities.

Concerning the former, since there are no estimates of boating, swimming, canoeing, and trail use in the District, it is difficult to assess whether

or not the supply is adequate to meet the demand. The figures for camping indicate that there is a large surplus of camping opportunities that are currently unused. Local impressions are that there are no shortages of boating, swimming, canoeing or snowmobiling opportunities. Cross-country skiing opportunities could be expanded especially as it appears to be increasing in popularity.

Concerning the latter, most Crown land recreation takes place in the road accessible southern portion of the Geraldton District and is centered around the lakes and access points. This area comprises about 14,600 sp.km. or 13% of the total District area. With the expanding road system, the accessible area is increasing rapidly, providing additional land and water area for Crown land recreation.

TABLE 26: SUPPLY OF CROWN LAND RECREATION FACILITIES IN THE GERALDTON DISTRICT, 1979

Activity	Unit of Measure	Facility Supply	Potential Use (occasions)
Boating	Parking spaces for boats and trailers	548*	328,800
Swimming	Linear meters of beach	16,254	2,080,512
Camping	number of campsites	274**	129,465
Canoeing	km. of designated canoe routes	1577	63,080
Downhill Skiing	n.a.	n.a.	n.a.
Trails:			
1) Hiking	km. of trail	3.2	1,400
2) Skiing	km. of trail	47.5	70,000
3) Snowmobiling	km. of trail	47.5	70,000

Source : MNR files
n.a. not available
** assume 4 parking spaces per access point*
*** assume 2 campsites per access point*

5. ECONOMIC IMPACT

Since most Crown land recreation activities (as defined here) are participated in by local residents, there is little contribution to the local

economy other than the redistribution of wages to local businesses. Camping probably provides the greatest input. It is estimated both resident and non-resident camper expenditures are 5 dollars per camper night (2). Consequently, the economic contribution of camping to the local economy is estimated at about $119,750. This figure is included (by assumption) in the economic contribution of sport fishing given later in the report.

D:commercial tourism

1. PRESENT DEVELOPMENT AND USE

The tourist industry in the Geraldton District is dependent primarily upon supplying high quality hunting and fishing opportunities. Present development of the tourist industry consists of the following: 32 lodges; 140 outpost camps; 22 seasonal moose hunt camps, and; 5 tent and trailer parks (see Figure 19). Commercial lodges may be remote or road accessible. Outpost camps and moose hunt camps are generally all remote locations.

The tourist season in the planning area runs from break-up in the spring to freeze-up in the fall. Season length varies from about 170 days in the south to 120 days in the north. Occupancy rates average about 71% over the season ranging from highs of 90% in May and 95% in October to a low of 40% in August.

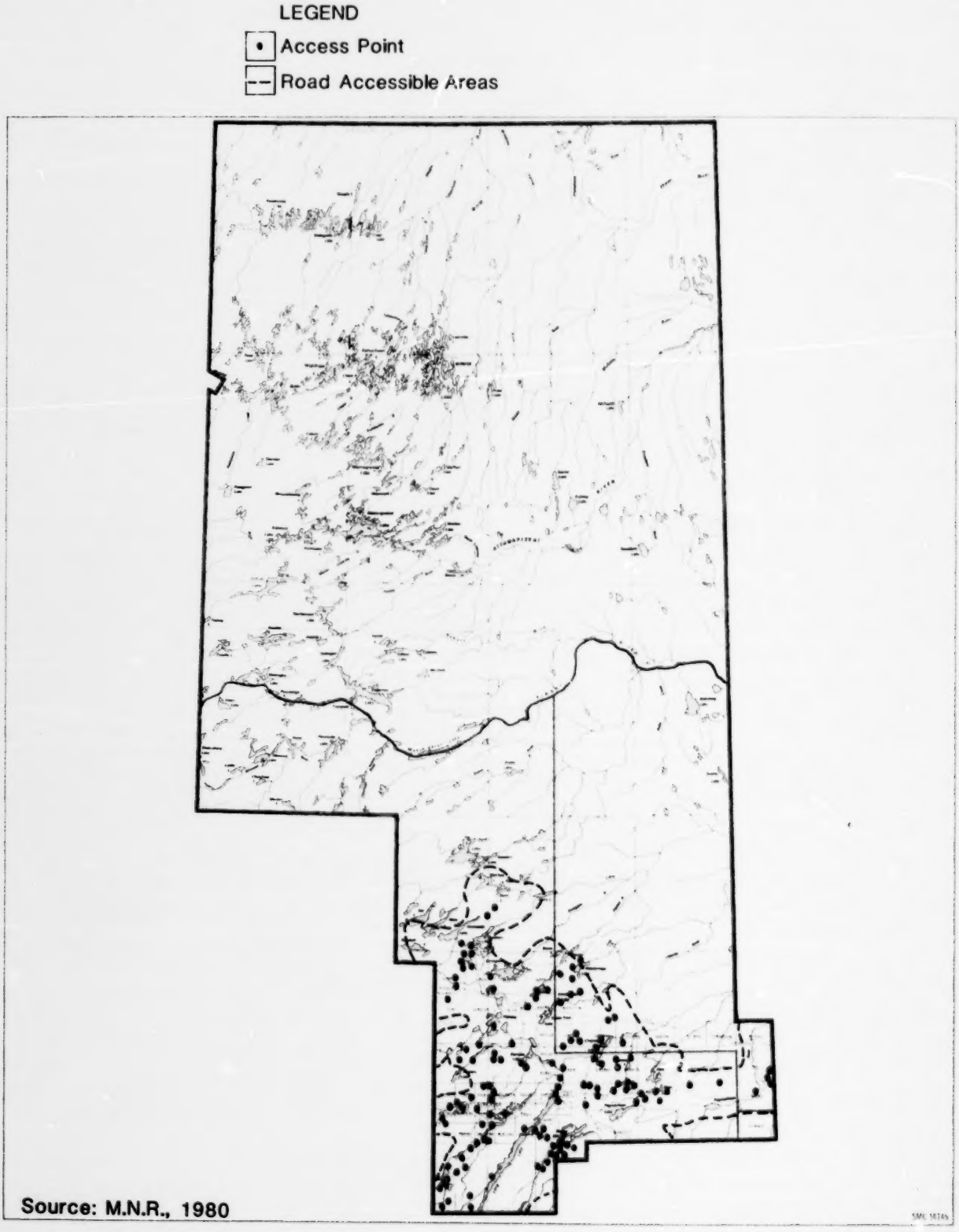
It is estimated that 82% of all fishermen and 41% of all hunters frequenting tourist establishments are non-residents of Ontario(3). While the non-resident tourist is primarily interested in a hunting or fishing vacation, the resident tourist is more oriented towards a family vacation.

2. THE ECONOMIC IMPORTANCE OF TOURISM

The tourist industry provides an important contribution to the economy of communities in the planning area. In small communities in Northern Ontario where local economies are dominated by one or two industries, the tourist sector offers a much needed diversification of the economic base.

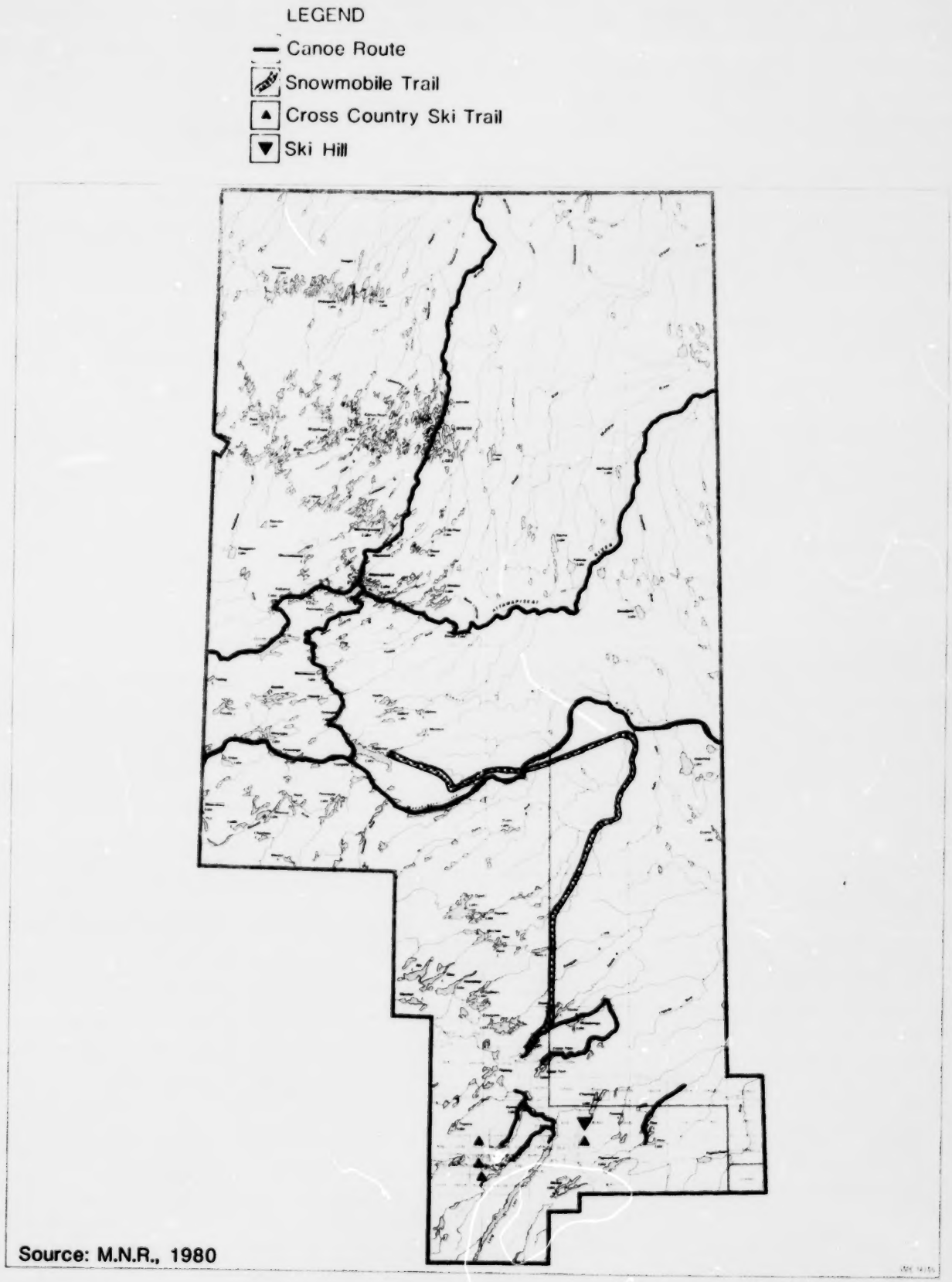
Access Points

Figure 17

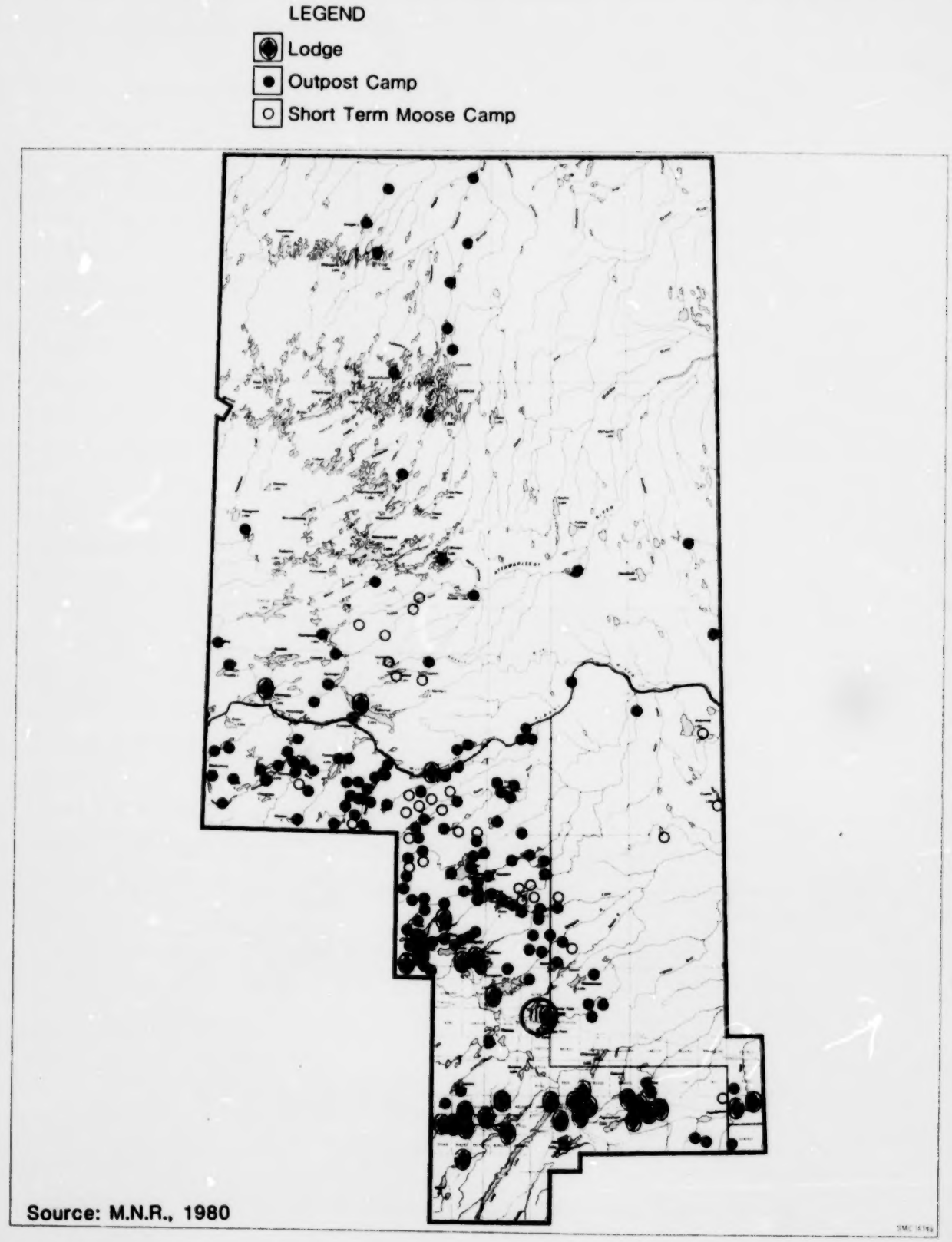


Crown Land Recreation Areas

Figure 18



Commercial Tourist Establishments Figure 19



An estimated 6% of the labour force in Northern Ontario is dependent upon the tourist industry for employment (4). Many of those employed are students and women living in small communities who would have difficulty finding employment elsewhere.

It is estimated that the tourist industry in the Geraldton District took in gross revenues of between 3.1 and 3.8 million dollars in 1979.

3. POTENTIAL FOR EXPANSION

There are two aspects to be considered when assessing the potential for growth in the tourist industry: 1) the possibility of an increase in tourist traffic, and; 2) the supply of suitable locations for new facilities.

The majority of lodge owners in Northern Ontario reported *"a stable or growing business. Greatest strength was reported among family vacationers and fishermen. Growth could occur in the industry, since existing lodges capture only a small share of actual fishing occasions in the North now."*

Presuming that the market is available to warrant expansion, suitable locations for commercial facilities must be available. It is the policy of the Ministry of Natural Resources to allow commercial tourist establishments to locate where the fisheries potential is adequate to sustain the operation. In the Geraldton District, there are few remaining sites available south of the Albany River. North of the Albany River, the policy has been to refer all applications for land to the Assistant Deputy Minister. This practice has resulted in very limited development by the Indian residents of the area only. Consequently, the tourist industry is somewhat limited in its potential to expand, at the present time.

E:sport fishing

1. INTRODUCTION

The information for the sport fishing summary comes from the following

sources: *1) 1979 access point survey; 2) 1980 Creel census program; 3) 1980 Crown land recreation survey; and 4) the ongoing creel census of outpost camps.* The 1980 fishing season was an anomaly to some degree, as a result of the bad forest fire season which resulted in restricted travel, campfire bans and adverse publicity which may have discouraged many fishermen. However, the information that was gathered is the best that is available at this time.

2. PRESENT USE

Sport fishing occurs in remote areas of the District, that is, where access is not available by road, and on lakes that are road-accessible. Most sport fishing in remote areas is carried out through tourist establishments at outpost camps or remote lodges. There is no creel census information available for sport fishing in remote areas outside of tourist establishments.

In accessible areas it is estimated that 22% of all fishing occasions occur through tourist establishments. Table 27 shows the breakdown by party origin for both remote and road-accessible sport fishing parties.

TABLE 27: PARTY ORIGIN

Location	Accessible	Remote
United States	60	91
Local	33	4.5
Ontario	6	4.5
Canada	1	0
Total	100	100

Source: MNR files

Table 28 shows the number of angler days and total catch by the remote and road-accessible sport fishing sectors. The calculations are shown in Appendix 8. The species of primary interest to fishermen are walleye and northern pike. There are incidental catches of lake and speckled trout, and perch.

TABLE 28: FISHING OCCURRANCE AND HARVEST, THE REMOTE AND ROAD-ACCESSIBLE SPORT FISHERMEN

	Remote	Accessible	Total
Fishing Occurance (angler days)	99,844	95,850	195,690
Harvest (kg)	405,840	185,710	591,550

Source: MNR files

3. CAPABILITY

Total fisheries productivity for the Geraldton District is 6,217,497 kilograms per year. Of this total, 3,704,796 kg/yr consists of top predator species (which are of most interest to sport fishermen).

4. POTENTIAL

The potential to expand the sport fishing industry can be assessed by comparing the present harvest and productivity (this excludes any consideration of commercial fishing). This calculation is shown in Table 29.

TABLE 29: SPORT FISHING POTENTIAL

Productivity (kg/yr)	Harvest (kg/yr)	%	Potential (kg/yr)
3,704,796	591,550	16	3,113,246

Source: MNR files

The figures indicate that only 16% of the available top predator species are being harvested by sport fishermen. This statement must be qualified by stating that several significant user groups are not included in the calculation: They include:

1) commercial fishermen (with top predator quotas);
2) native use; and
3) a probable underestimate of local use (due to the nature of the 1980 survey).

In addition, it should be noted that only about 13% of the District is road accessible producing a concentrated use in a smaller area. This

results in serious overharvesting of some lakes

5. ECONOMIC IMPORTANCE

The economic importance of the commercial tourist industry will be discussed in the 'tourism' section of the report.

The average daily expenditure per angler is about $19.20, for an estimated total expenditure of about $961,750 (5). Actual expenditures on food account for about 18.6% of this total and expenditures on equipment account for 2.6% of the total. The remainder of the expenditures (78.2%) would include such things as entertainment, travel, souveniers etc.

6. FISHERIES MANAGEMENT

Each year the Ministry of Natural Resources inventories and maps lakes and streams. Information gathered can be used to determine productivity, an important tool for fisheries management.

The Ministry of Natural Resources, in conjunction with the Ministries of Environment and Labour, is involved in contaminant testing of fish in various waterbodies across the province.

More detailed information on fisheries management issues is available at the Geraldton District office.

F:wildlife

1. SMALL GAME

a. Introduction

Small game is important primarily for its contribution to recreation in the Geraldton District. Small game species provide hours of hunting pleasure for local, non-local and non-resident hunters, plus considerable aesthetic enjoyment to campers and sightseers. Small game are also important in the ecosystem organization as a link between plants and carnivores.

Small game species include the following: spruce and ruffed grouse; snowshoe hare; waterfowl (ducks and geese); and, to a lesser extent, sharp-tail grouse and willow ptarmigan.

b. Spruce and Ruffed Grouse

Ruffed grouse appear to prefer transitional areas between upland and low-land sites with small clearings and pockets of wetland areas, generally dominated by trembling asper (Berner and Gysel, 1969). Trembling aspen is the single most important year round food. The spruce grouse is found mostly in the wet coniferous forests of Northern Ontario. The major component of its diet are needles and buds from coniferous trees (Ellison, 1976).

Spruce and ruffed grouse are the species most preferred by small game hunters. In 1979, 950 small game licences were sold to residents of Ontario (primarily local residents) and 23 to non-residents in the Geraldton District. There is no estimate of the actual harvest available. However, it is estimated that hunting has little effect on the spring grouse population since 60 to 70 percent of the population is normally lost between autumn and the following nesting season regardless of hunting pressure (Dawson, 1972).

Grouse populations follow a cyclic pattern where the population peaks every nine or ten years followed by sudden declines (Madison, 1969). The exact reason for the cycle is unknown but it does occur in hunted and unhunted areas alike.

Past managment of grouse in the Geraldton District has been limited to season manipulation and bag limits. In the future, habitat management may be required as efforts are made to shift hunting pressure from big game to small game.

c. Snowshoe Hare

The snowshoe hare occupies the entire transcontinental coniferous forest of North America, inhabiting forests, swamps and thickets (Murie, 1974). It is a browser of both hardwoods and softwoods. The population is cyclic with peaks occuring every nine to ten years followed by rapid declines (Keith and Winberg, 1978). Because it follows well worn trails in the winter, it is easily snared or hunted by man. A small game licence is required to hunt snowshoe hare.

d. Waterfowl

The Geraldton District is not situated on any of the major flyways and

therefore does not get a large influx of waterfowl in the fall. Although some increase is apparent, most of the waterfowl found in the district are locals and return year after year. Black ducks and mallards make up the bulk of the population but baldpate, green and blue winged teal, pintail, lesser scaup, goldeneye, ringnecks, canvasbacks and mergansers are also present.

The lakes within the district which attract large waterfowl populations are those supporting a wild rice crop. Burrows, Arm, Poilu and Murky Lakes all have fair to good duck hunting and all support a wild rice crop.

In 1979, 433 migratory bird licences were issued in the district. Waterfowl hunting is confined almost exclusively to local residents. There is no harvest information for the district as a whole, however, estimates of the native harvest have been made. It is estimated that the natives harvest about 2,400 ducks and 1,700 Canada geese, blue and snow geese each year.

It is estimated that one-half of the waterfowl population present on September 1 will die within one year regardless of whether or not hunting occurs.

e. Sharptail Grouse and Willow Ptarmigan

Both the sharptail grouse and willow ptarmigan occur in only incidental numbers in the Geraldton District. The cyclical population trends of sharptail grouse sometimes result in a large influx into the district from the northeast. They generally do not survive through the summer. The few willow ptarmigan in the district have migrated from their home range along the Hudson Bay coast.

2. TIMBER WOLF

a. Introduction

The timber wolf has been subject to both intense hatred and grudging admiration and even today the wolf's role in the ecosystem and its subsequent effects on man are not well understood. In the future, as wildlife management becomes more sophisticated, the role of top predators like the wolf will have to be fully understood.

There is little information specific to the Geraldton District, on the wolf. This report will present some of the information that is available in an attempt to foster public understanding of the usefulness of this

species.

b. Population Size and Distribution

Present estimated wolf densities within the Geraldton District vary from .006 wolves per km^2 in the northern portion to .012 wolves per km^2 in the southern portion (Kolenosky, 1979). Based on these density estimates, the wolf population in the district is 690 wolves in 133 packs (Mech, 1977). Higher wolf densites in the southern portion of the district may be due to the greater number of observations because of the larger population, or to more suitable habitat conditions (higher moose density).

c. Characteristics

It is evident that big game species such as caribou and moose may be the primary prey of wolves. A less significant portion of the diet is composed of other prey species such as beaver, snowshoe hare, birds, etc. Studies indicate that wolves completely utilize their kills before they begin hunting again. This is necessitated by the large expenditure of energy required to kill its prey and the need to limit the possibility of sustaining serious injury.

Wolves have few natural enemies because of their position as top carnivores. Mortality may result from: 1) malnutrition resulting from the inability of the female to obtain sufficient food to nourish her young; 2) social stress; 3) injuries sustained during attacks on large prey; and 4) disease or heavy parasite infestation. In addition, man contributes to wolf mortality through hunting and trapping.

Between 1978 and 1980, a total of 45 wolves were harvested by hunters in the Geraldton District. Between 1948 and 1979, a total of 423 wolves were harvested by trappers in the district. The relative consistency of the harvest from year to year may indicate that trapping is only removing a portion of the surplus individuals and is not affecting the breeding nucleus of the population.

d. Importance

Evidence exists that wolf predation is important for the maintenance of a healthy moose population. The most important effect is considered to be the "sanitation or culling effect" (Mech, 1970). The result of this process is the removal of the young, old and otherwise inferior animals from the population.

A second important biological effect of wolf predation is the control of moose populations. The arguments surrounding this effect are too complex

to be included in this report but this is a controversial subject because wolves appear to be competing with man for a limited resource.

Wolf predation also has an important role of supplying food to a number of scavenger species.

In addition to the positive biological effects of wolf predation, there are also aesthetic, research and economic benefits derived from the wolf population. The wolf is of considerable economic benefit to the trapper; an important member of the ecosystem to the researcher; and aesthetically pleasing to the recreationist when sighted.

3. BLACK BEAR

a. Introduction

Early settlers destroyed black bears because of the perceived competition they represented and the real or imagined threat they posed to personal well-being. Today the black bear is being recognized as an increasingly valuable resource to big game hunters and recreationists alike.

b. Present Population and Characteristics

Black bear densities vary from light (.004 - .057 bears/km^2) in the northern portion of the district to moderate (.058 - .108 bears/km^2) in the southern portion (Kolenosky, 1979). Based on these density estimates, a total population of 4,851 animals was derived.

Optimum habitat conditions are found in relatively early seral stages of forest succession. Maximum bear densities are realized in habitats demonstrating high ecological diversity.

Black bears are basically omnivorous in their food habits. Study of black bear diets has shown them to be comprised of 76.7 percent vegetable matter, 7.4 percent insect protein, 15.2 percent carrion and 0.7 percent small mammals (Banfield, 1974).

c. Present Use

(i) Natural Mortality. Black bears have few natural enemies in the wilds. Natural mortality generally results from social stress within bear populations. Subadults are the most vulnerable segment of the population, especially after the disjunction of the family unit, probably as a result of malnutrition and encounters with adult bears (Kolenosky, 1980). Adult females tend to experience higher mortality rates than males probably in defense of their young in encounters with adult males (Erickson, Nellor

and Petrides, 1964). Mortality for bears utilizing garbage dumps is higher than for bears foraging naturally. This is probably a result of more aggressive encounters between individuals competing for the same feeding site (Free, 1968).

(ii) Hunting Mortality. Hunting pressure on the black bear in the Geraldton District is light. In 1980, only 1.6 percent of the estimated population was killed. However, it must be remembered that reporting bias by hunters often leads to underestimates. Table 30 shows the annual harvest between 1976 and 1980.

The greatest percentage of the yearly harvest occurs in the spring. This may be due to the changes in bear behavior, habitat conditions or reduction of hunter interest in the fall.

TABLE 30: BLACK BEAR HARVEST BY SEASON, 1976-1980

Year	Harvest (no. of bears)		
	Spring	Fall	Total
1976	36	3	39
1977	42	14	56
1978	30	6	36
1979	44	0	44
1980	76	0	76

Source: MNR files

(iii) Trapping Black bear mortality due to trapping in the Geraldton District appears to be minimal as only 29 bears were harvested between 1972 and 1980.

(iv) Non-Hunting Mortality Other causes of mortality include bears killed by vehicles and/or killed as nuisance animals. Between 1966 and 1980, 13 bears were killed by vehicles and 59 shot as nuisance animals.

d. Importance

When discussing the importance of the black bear, both the consumptive and non-consumptive uses must be considered. Non-consumptive uses include viewing and scientific research. Both of these uses are important but the benefits are less tangible than those associated with hunting.

Between 1972 and 1976, the average annual participation in both the spring

and fall bear hunt was about 2,997 hunter days. Residents and non-residents of Ontario accounted for 16.6 percent and 83.4 percent of the hunting occassions respectively. Residents do not participate in the fall bear hunt. Non-resident participation in the spring and fall bear hunt is 85.8 percent and 14.2 percent respectively (see Table 31).

Average annual expenditures on black bear hunting are $10,961 by residents and $100,514 by non-residents.

TABLE 31: AVERAGE PARTICIPATION PER YEAR IN BLACK BEAR HUNT, GERALDTON DISTRICT, 1972-1976

	Resident		Non-Resident	
	Participation (hunter days)	%	Participation (hunter days)	%
Spring	497	100.0	2230	85.8
Fall	0	0	369	14.2
TOTAL	497	100.0	2,599	100.0

Source: MNR files

4. WOODLAND CARIBOU

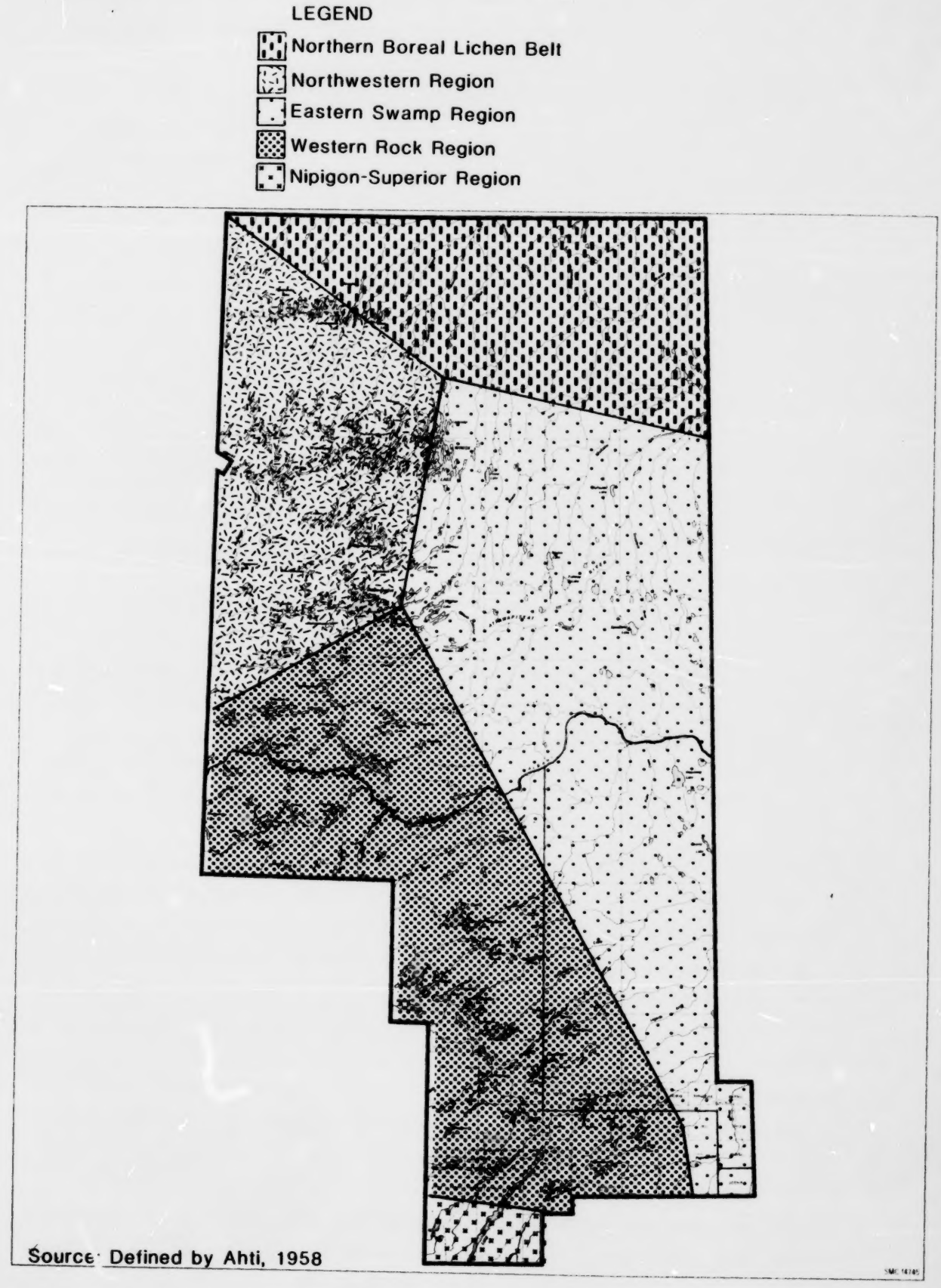
a. Introduction

Studies of woodland caribou have been carried out in Northern Ontario since the 1950's. The elusive and migratory character of the caribou make it a difficult animal to survey. Consequently, the results from different surveys are often contradictory. Recent studies carried out by the Ministry of Natural Resources for the West Patricia Land Use Plan have provided what is believed to be the most accurate information currently available.

b. Population and Habitat

Woodland caribou range in the Geraldton District can be divided into seven types based on physiography and the abundance of vegetation important to the ecology of caribou (Ahti, 1958). Figure 20 shows these divisions for the Geraldton District. Recent surveys carried out by the Ministry of Natural Resources (Hamilton, 1978 and 1979) have provided density

Caribou Range **Figure 20**



estimates for each of the seven range classifications. Table 32 shows the population estimate for woodland caribou in the Geraldton District.

TABLE 32: POPULATION ESTIMATE FOR CARIBOU FOR GERALDTON DISTRICT BASED ON HAMILTON'S WORK (1978a).

Range Division	Area (km^2)	Estimated (caribou) Density per km^2)	Population
Northern Boreal Lichen Belt	17,467	0.1160	2,026
Northwestern Region	19,220	0.0069	133
Eastern Swamp Region	44,982	0.0044	198
Western Rock Region	30,110	0.0117	352
Nipigon-Superior*	1,868	-----	---
TOTAL Number of Caribou			2,709

Source: MNR files

** no density figures available for the Nipigon-Superior range division*

In the early winter, caribou feed primarily on arboreal lichens in tamarack and black spruce bogs. As travel becomes more difficult, they may retreat to ridges where wind and topography combine to maintain areas of light snow accumulation (Cummings, 1979). Winter ranges tend to be confined to small areas of suitable habitat which may be used year after year.

As the snow recedes in the spring the herds tend to disperse. Cows often move to islands to bear their young, primarily for protection from predators. Calving areas in the Geraldton District are not well known. The islands in Fleming and Esnagami Lakes are thought to be utilized for this purpose but there is no concrete evidence to substantiate this. Cows remain on the islands with their calves well into the summer.

During the summer, caribou do not utilize an extensive range since food is abundant. Their diet consists of fungus, lichens, deciduous shrubs and aquatic plants.

Herd size increases in the fall as cows, calves and bulls move together for the rutting season. Mushrooms and fungus are a favourite fall food

along with lichens, evergreen shrubs and seed plants.

c. Mortality

The key factors affecting caribou mortality are hunting and predation. Starvation, severe weather, accidents, disease, fighting and senility are considered to have a minimal affect on the population.

Since 1929, the hunting of caribou by non-native people has been prohibited The annual native harvest is estimated to be about 3.4% (Gray, 1978) of the population. The hunting is done primarily by trappers during the trapping season (November to April). The kill is highly variable from year to year reflecting the fact that the odds of encountering a herd are small but the number of animals shot from each herd is high.

Aside from man, the wolf is the caribou's most serious predator. Very little is known about the level of wolf predation and the effect on the population.

Assuming a natural mortality rate of 5-6% (Bergerud, 1971), recruitment rates of 16.7% (Simkin, 1965), and an annual harvest of 3.4% (Gray, 1978), a population increase of 8% might be expected. Surveys appear to indicate that the population in the planning area are stable or slightly increasing (Hamilton, 1978).

d. Importance

Before the arrival of the Europeans, caribou were an important economic resource. Traditionally, the caribou has been well utilized. Its meat was used for human consumption and dog food while the skins were made into light warm clothing, bedding and tepees. The sinews were used as thread, bones as utensils and the fat for light and heat. Prior to the 1929 game restriction, the caribou was prized as one of the big game animals in North America.

In the last few decades the caribou has been supplanted by other sources of food and manufactured items (Banfield, 1974). As a result, the economic importance of the caribou is declining.

The other aspect to consider is its importance for wildlife viewing and aesthetics. Although seen only infrequently, the sighting of one of these animals can be the high point of a vacation or daily outing.

5. MOOSE

a. Introduction

The moose is the most important big game animal in the Geraldton District. For the purposes of moose management, the province has been divided into wildlife management units (WMU). The Geraldton District is responsible for the compilation of information concerning the moose population in WMU 17,18 and 19. Portions of WMU 1 and 21 also fall within the Geraldton District. Figure 21 shows the wildlife management units in the Geraldton District.

b. Population

Based on the most recent aerial survey estimates of moose density, the moose populations of WMU's 17,18 and 19 were estimated at 5,681, 2,548 and 805 respectively. Table 33 shows the total area, observed moose density and projected population for WMU's 17 18 and 19.

TABLE 33: PROJECTED MOOSE POPULATION FOR WILDLIFE MANAGEMENT UNITS 17, 18, and 19.

WMU	Total Area (km^2)	Observed Moose Density (moose/km^2)	Projected Population
17	29,900	.19	5,681
18	19,600	.13	2,548
19	11,500	.07	805

Source: MNR files

Indications are that population densities have been declining over the years however this is open to question since there are many variables involved in aerial surveys from year to year. Figure 22 shows the high, medium and low moose density areas in the Geraldton District.

Moose require a diverse habitat typified by the early seral stages of forest succession (Dodds, 1974; Krefting, 1974). Historically, wildfire has been the important factor in creating suitable habitat. However, modern fire control methods have significantly reduced the amount of area burned annually. Logging is presently the most important factor in creating the seral shrub stages required by moose.

However, with the advent of modern timber harvesting techniques, the area

of clear cut has greatly increased. Regeneration efforts are usually aimed at producing a single species on a sustained yield basis. The result is a reduction in habitat diversity essential to moose.

The intent of the provincial moose management program is to increase the moose population through harvest control, habitat management and predator control. With the full implementation of the program, moose populations are expected to increase significantly.

c. Mortality

(i) Non-Hunting Mortality. Non-hunting mortality losses of moose are attributable to a variety of causes which include: collisions with motor vehicles and trains; illegal harvesting; harvesting by Treaty Indians; natural mortality such as predation by wolves, parasites or accidents; and, unknown causes. Between 1973 and 1978, 147 moose fatalities were reported. The breakdown of causes is as follows: collisions with motor vehicles and trains, 56%; illegal harvesting, 22%;native harvest, 15%; and, other causes including drowning and predation, 7%. The total number of non-hunting fatalities is probably under-estimated as many of the incidents are never reported.

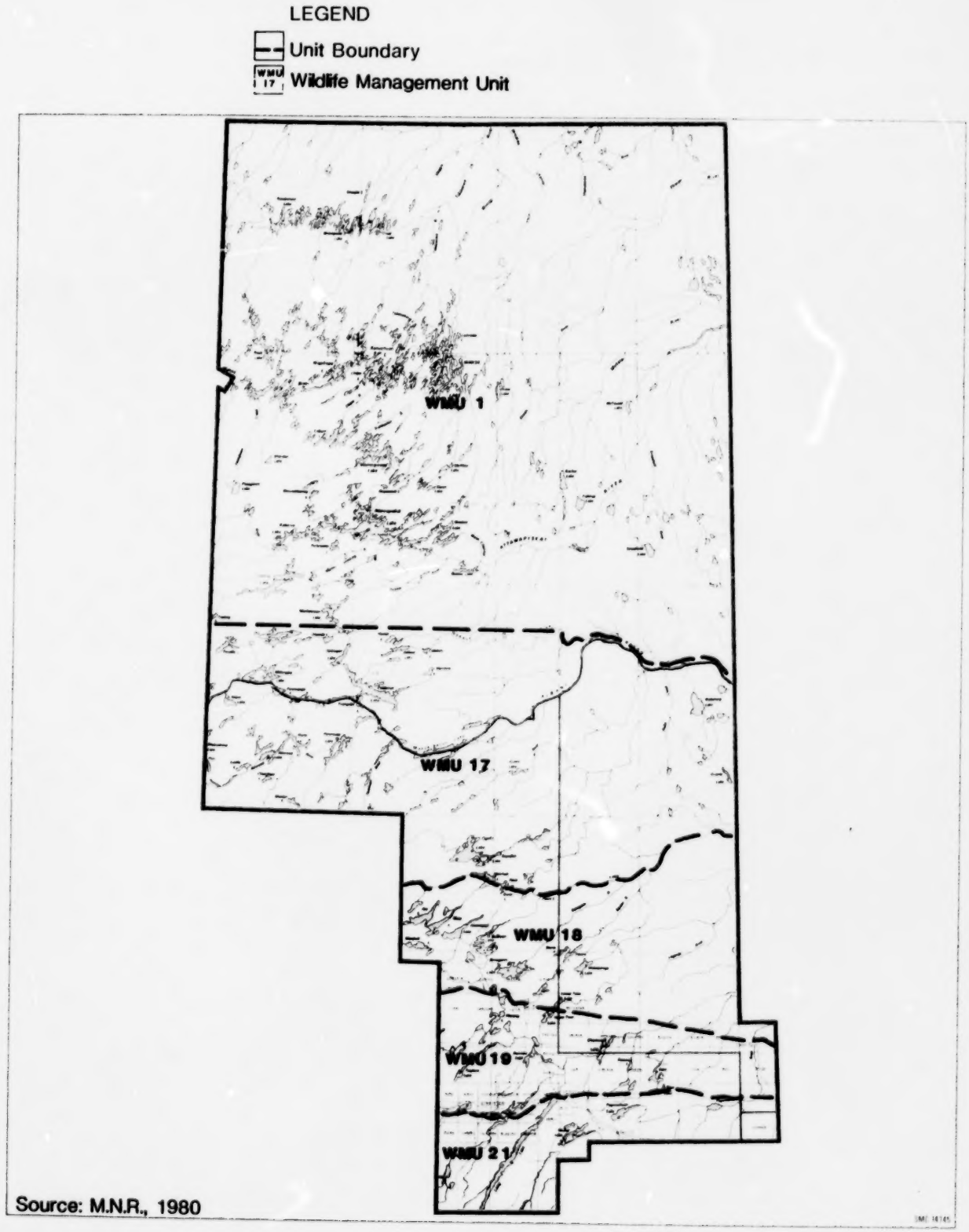
(ii) Hunting Mortality. Wildlife management unit 17 is subject to the least hunting pressure followed by units 18 and 19 respectively. Table 34 shows the estimated number of hunters between 1973 and 1978 and the yearly average by management unit.

An increasing trend in hunter numbers has been noted for WMU 17. At present, this unit has no road access so hunters must utilize aircraft. Between 1973 and 1978, 54% of the hunters were non-residents of Ontario. In 1980, only 36.4% were non-residents. The increase in hunter numbers may be due to a desire by hunters for a higher quality hunting experience. An average of 54 moose per year were harvested from WMU 17 between 1973 and 1980.

There are a total of 230 km of roads accessing primarily the south-central portion of WMU 18. An aircraft is required to hunt the more northerly portions of this unit. Road access into WMU 18 is increasing rapidly. Of the estimated total of 6160 hunters utilizing this unit between 1973 and 1978 (see Table 34), 22.1% were non-residents. Indications are that there has been an annual decline in hunter numbers over the last few years. The average annual harvest between 1973 and 1980 was 52 moose.

Wildlife Management Units

Figure 21



Moose Densities

Figure 22

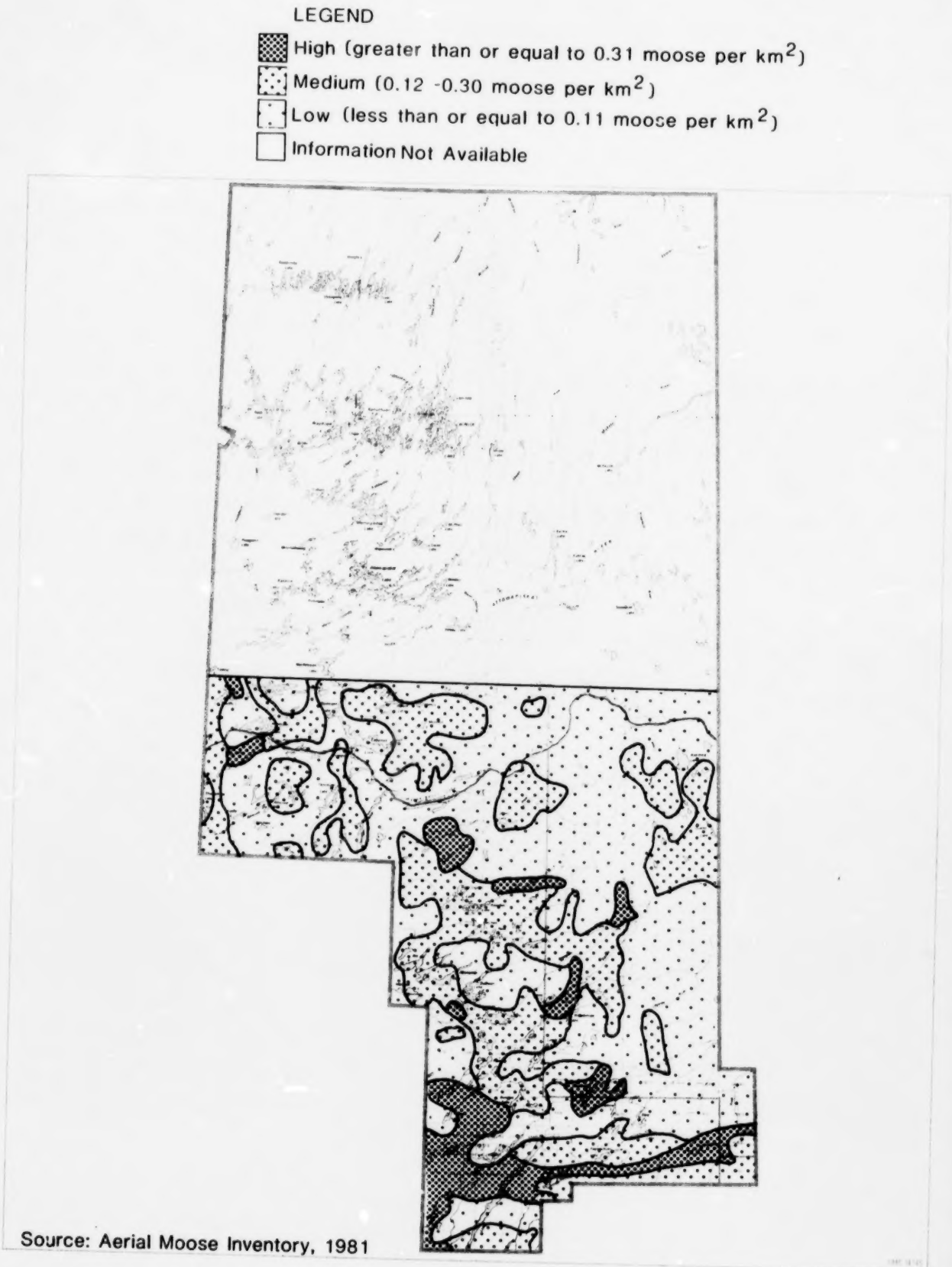

LEGEND
High (greater than or equal to 0.31 moose per km2)
Medium (0.12 -0.30 moose per km2)
Low (less than or equal to 0.11 moose per km2)
Information Not Available
Source: Aerial Moose Inventory, 1981
40 0 40 80 120 km
20 0 20 40 60 80 m

TABLE 34: NUMBER OF HUNTERS AND HARVEST BY WILDLIFE MANAGEMENT UNIT

WMU	Harvest (moose)		No. of Hunters	
	1973-80	Average No./yr	1973-78	Average/yr.
17	435	54	2,178	363
18	413	42	6,260	1,043
19	1128	141	14,755	2,459

Source MNR files

The majority of WMU 19 is accessible by road. There are 325 km of public highway and 1370 km of private timber company roads which are normally open to the public. Of the estimated total of 14,755 hunters utilizing WMU 19 between 1973 and 1978, 13.6% were non-residents. A steep decline in the number of hunters has been evident over the past few years probably as a result of the declining success rate. The average harvest between 1973 and 1980 was 141 moose per year.

d. Harvest Potential

It is estimated that sport hunting can remove 11% of the population annually without endangering the existence of the herd. Table 35 shows the total estimated population, present harvest and allowable harvest by wildlife management unit.

TABLE 35: POTENTIAL HARVEST BY SPORT HUNTERS

WMU	Total Population	Potential Harvest (11%)	Actual Harvest	Difference
17	5,681	625	54	+571
18	2,548	280	52	+228
19	805	89	141	-52

Source: MNR Files

It appears from Table 35 that the actual harvest is considerably less than the potential harvest except in the case of WMU 19. However, the

figures representing actual harvest include only those kills where the hunter has turned in the jaw to the Ministry of Natural Resources. Consequently, the total harvest is probably underestimated. In addition, the figures mask the problem of local overharvesting of the moose population which is most accessible to the hunter. This is a problem on remote lakes which are heavily hunted and adjacent to roads in accessible areas.

e. Importance

Moose hunting contributes to the local economy each year. Both the tourist industry and local service sector benefit from the influx of hunters each fall. The Crown Land Recreation Survey estimates that each resident and non-resident contributes $15. and $40. per hunter day respectively, to the local economy.

Between 1973 and 1978, a total of 209,647 hunter days of recreation occurred, with an average of 34,961 hunter days per year. Non-residents accounted for 11% of the total and residents 89% in 1978. Consequently, the annual contribution to the economy is estimated at $620,202 per year.

Other less substantial benefits are derived from a healthy moose population. These include: 1) aesthetic values; 2) teaching and research opportunities; and 3) an indication of environmental quality.

Notes:

(1) Ontario Ministry of Natural Resources, Towards the 80's, A Guide to the Organization and Management System, (February, 1979)

(2) Ontario Ministry of Natural Resources, Crown Land Recreation Study prepared by Hough, Stansbury & Associates Limited, Jack B. Ellis and Associates Limited, (June 1977)

(3) The Hunting and Fishing Lodge Industry in Northern Ontario, prepared by Ruston/Shanahan & Associates Ltd., Hough, Stansbury & Associates Ltd, Jack B. Ellis and Associates Ltd., 1978.

(4) ibid

(5) This figure excludes income to the tourist industry. Built into this estimate is the cost of travelling from home to destination and back (for non-locals).

A:introduction

The objective of the Resource Products Program is:
To provide an optimum contribution to the economy of Ontario by stimulating and regulating the utilization of available supplies of fish, furbearers, minerals and trees by resource products industries (1).

Under this program the Ministry of Natural Resources is concerned with the production, utilization and economic viability of the following industries;

1) commercial fishing;
2) wild rice;
3) commercial fur;
4) mineral and aggregate;
5) timber.

B:commercial fishing

1. HISTORY

Commercial fishing was introduced into the planning area when the Hudson Bay Company hired Indians to supply fish for their posts during the winter. Commercial fishing increased in importance during the late 1930's and 1940's when Keezhik, Petawanga, Mimininska and Makokibatan Lakes were heavily exploited for lake sturgeon.

Over fishing and market changes caused the sturgeon fishery to decline in importance in the 1950's and fishermen began concentrating primarily on yellow pickerel and lake whitefish. Problems of high transportation costs, low prices and high levels of mercury in some lakes have kept the industry from expanding.

In 1969, the Federal Government set up the Freshwater Fish Marketing Corporation. The Corporation is a self-sustaining marketing operation

which packs, transports, and markets fish. The central plant is in Transcona, Manitoba and the receiving station is located at Pickle Lake. A few non-native fishermen are exempt from the FFMC and they transport and sell their fish in MacDiarmid.

2. PRESENT HARVEST

Between 1973 and 1978, 53 lakes have been fished, with varying intensity, in the Geraldton District. These lakes are shown in Figure 23. Table 36 shows the annual harvest. The side fluctuations in harvest from year to year are due mainly to differences in the amount of time and effort spent.

In 1978, 16 lakes were fished for a total harvest of 92,023 kilograms. The harvest was composed of 26% yellow pickerel, 62% lake whitefish, 7% northern pike, 0.5% lake sturgeon, and 4.5% suckers and cisco. The native commercial fisheries (Fort Hope, Kasabonika, Summer Beaver, Lansdowne House, Webequie and Wunnimmin Lake) accounted for 81.6% of the total harvest. The native fisheries are air accessible only, located predominantly north of the Albany River.

TABLE 36: HARVEST (kg) FOR 1973 TO 1978 IN GERALDTON DISTRICT

Fishery	Number of Lakes	1973 kg	1974 kg	1975 kg	1976 kg	1977 kg	1978 kg	Yearly Average kg/yr
Fort Hope	9	22,413	20,958	2,551	5,139	6,430	7,669	10,863
Kasabonika	2	13,905	0	0	6,623	6,905	27,907	9,223
Lansdowne House	14	18,904	20,861	11,827	14,131	350	15,499	14,429
Summer Beaver*	3	9,956	8,996	10.408	12,507	14,663	8,592	10,864
Webequie	7	3,993	9,249	10,806	5,816	696	14,628	7,532
Wunnummin Lake	1	1,755	0	1,520	3,173	0	796	1,208
Indiv.(air)	9	14,749	9,774	13,039	852	8,155	15,630	10,367
Indiv.(road)	8	4,032	2,338	2,254	3,138	1,144	1,302	2,367
TOTAL	53	89,707	72,176	52,405	51,462	43,343	92,023	66,853

Source: MNR files

* *In addition, Summer Beaver Fisheries fishes Pineimuta Lake in Sioux Lookout District*

Commercial Fisheries

Figure 23

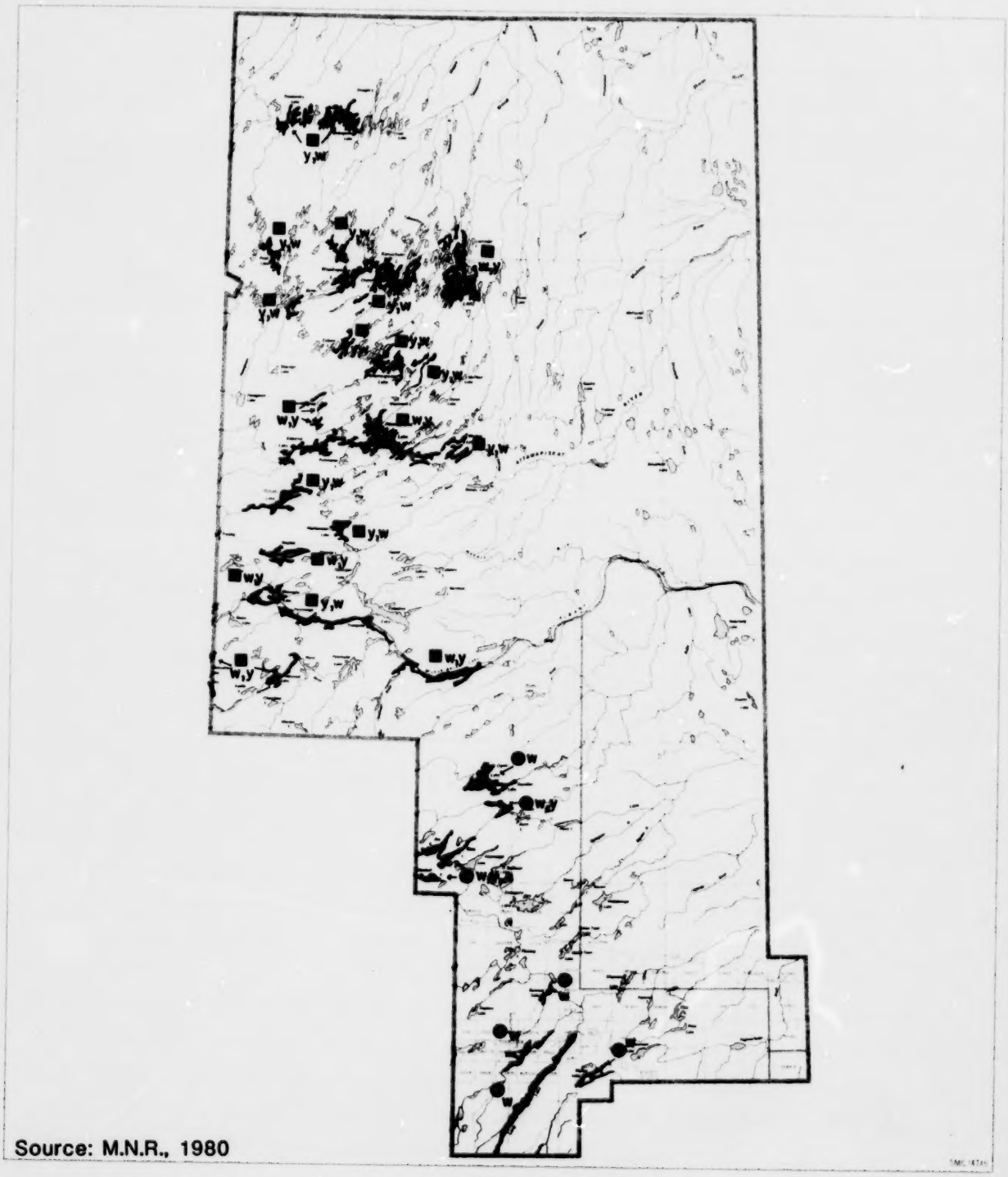
LEGEND

Fisheries Status

- ■ Native
- ● Other

Fish Species

- y Yellow Pickerel
- w Whitefish
- n Northern Pike



Source: M.N.R., 1980

40 0 40 80 120 km
20 0 20 40 60 80 m

3. POTENTIAL FOR EXPANSION

South of the Albany River most of the fisheries resources are utilized by tourist operators and sports fishermen. There is some potential to expand the harvest of coarse fish species but this is dependent on market conditions. North of the Albany River most of the major lakes are currently licenced.

In 1978, the Geraldton District issued commercial fishing licences for 43 lakes with quotas of 203,212 kg. and 196,864 kg. for yellow pickerel and whitefish repectively. The actual harvest consisted of 12% of the yellow pickerel quota and 29% of the lake whitefish quota. This indicates that the actual harvest is well below the potential.

4. ECONOMIC IMPORTANCE

Sixty-four native fishermen from 6 Indian communities north of the Albany River and 13 non-native fishermen located on or south of the Albany River are employed part-time in the commercial fishing industry in the Geraldton District. The value of the 1978 catch was approximately $70,372.

5. BAIT FISHING

In 1978, 34 of 244 bait fish blocks in the district were licenced (see Figure 24). Twenty-six bait fish harvest licences and 29 bait fish dealer licences were sold. The estimated harvest of 54,000 dozen minnows consisted predominantly of shiner, chubs, suckers and dace. It appears that the demand for bait fish is being met.

C:commercial fur

1. INTRODUCTION

The commercial fur industry is one of the oldest economic activities in the Geraldton District. It started in the late 1600's with the penetration of the Albany River by French fur traders. The fur trade activities were responsible for establishing many transportation routes and the nucleus of the present day settlement pattern.

The Ministry of Natural Resources has an active role in the management of the commercial fur resources in the Province. This includes the issuing of trapping licences under the Game and Fish Act, conducting aerial beaver surveys to determine population levels, setting quotas for fur trapping, documentation of sealing records to monitor harvesting levels, and collecting royalities for exported furs. The Ministry of Natural Resources also conducts trapper interviews and workshops to advise trappers of new equipment and techniques, and to demonstrate proper handling of furs.

2. PRESENT USE

There are 148 traplines that are administered by the Geraldton District that range in size from less than 52 sq.km. to over 3,880 sq.km. (see Figure 25). The traplines are grouped into management areas which correspond to established band areas in the district. These are shown in Table 37.

There are over 400 registered trappers in the Geraldton District, 12.5% being non-treaty trappers and 87.5% being treaty Indians.

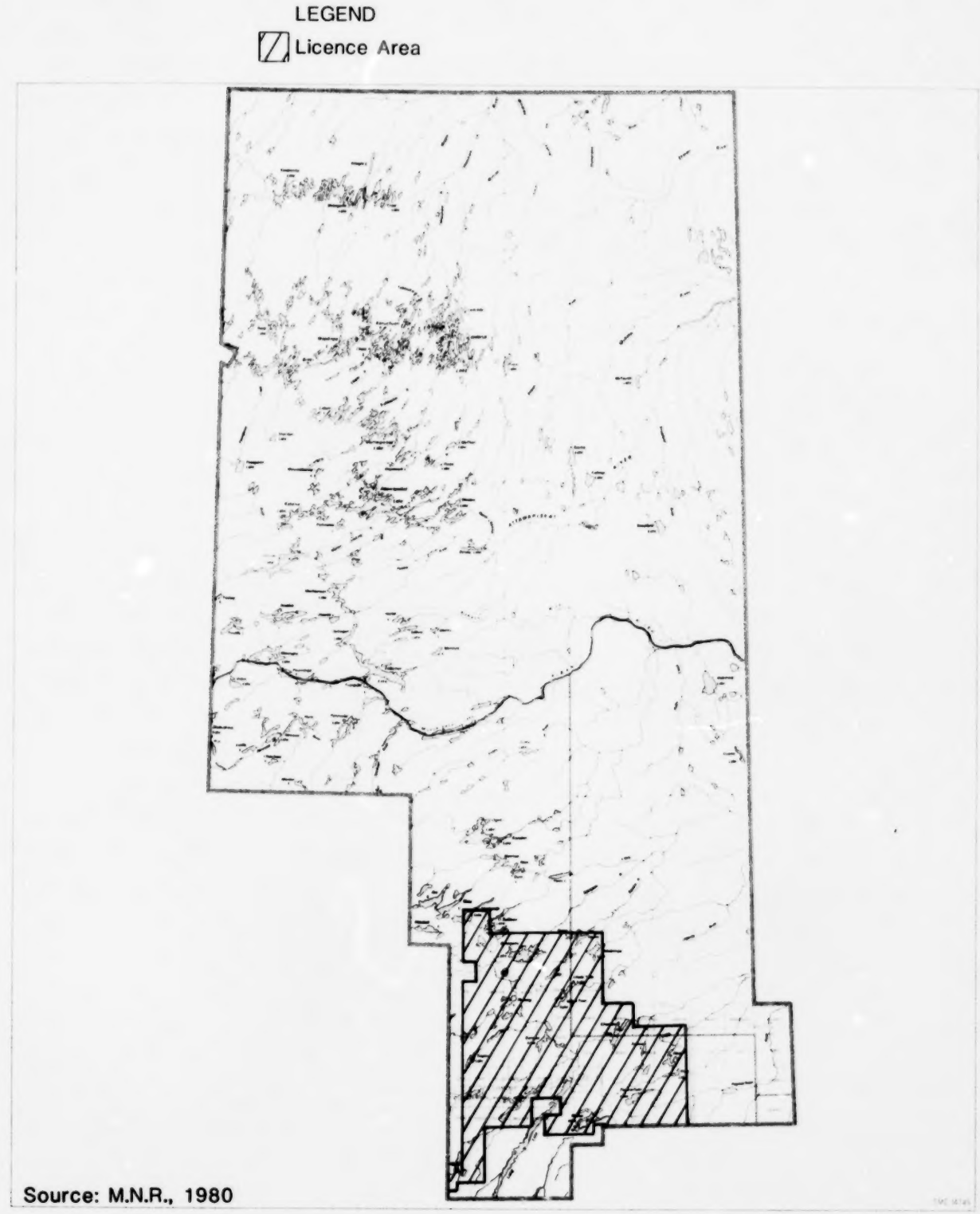
The total harvest for the 1978-79 trapping season in the Geraldton District consisted of the following; 7719 beaver; 1241 mink; 6,559 marten; 835 otter; 38 fisher; 174 lynx; 5763 muskrat; 198 coloured fox; 33 timber wolves, and 932 pelts of other species including raccoon, squirrel, weasel, bear and coyote.

TABLE 37: TRAPPER ORIGIN

Management Area	Trapper Origin
54 Fort Hope	Fort Hope
65 Kasabonika	Kasabonika, Angling Lake, Trout Lake, Long Dog Lake
68 Lansowne	Lansdowne House, Webequie, Summer Beaver
79 Ogoki River	Marten Falls Reserve
97 Winisk	Winisk
04 Longlac	Longlac
03 Geraldton	Geraldton
76 Nakina	Nakina

Bait Fish Licence Area

Figure 24



3. TRAPLINE CAPABILITY AND POTENTIAL

Beaver quotas have been established for each of the traplines in the planning area. Where trapline surveys have been completed the quota is set at 1.5 beavers for each occupied lodge. If no trapline survey exists, the quota is established using a best estimate.

Between 1977 and 1979, 21 traplines were surveyed, with a total estimated harvest of 1,664 beaver per year. The actual harvest from these traplines was 1,066 beaver, which is 64% of the quota.

The percentage of the beaver quota taken each year depends on beaver density and trapper effort. Some trapline harvests are consistently low (10% of the quota) while others are harvested in excess of the quota. However, it appears that there is some leeway for increasing the harvest.

4. ECONOMIC IMPORTANCE

Most furs are sold through the Hudson Bay Company and/or the Ontario Trapper's Association. Fur prices vary from year to year depending on the fashion industry and the international markets.

Income derived from trapping varies from no income to over $12,000 per year. In the Geraldton District, the total value of fur sold in 1979 was about $800,000. The average income per trapper was $1,940. Trapper income depends on trapper effort, trapline productivity, care in fur handling, and fur prices. The wide range in individual incomes indicates a large difference in trapper effort from no effort to full utilization of the trapline.

Beaver was the most important species by economic value making up 38% of the total value of fur caught. Second in economic importance was marten (26%), followed by otter (11%), lynx (10%), muskrat (5%), mink (5%), and coloured fox, timber wolf, and fisher comprising the remainder.

D:wild rice

1. INTRODUCTION

Wild rice is a member of the grass family and is the only indigenous cereal found in Ontario. The Geraldton District is not a significant wild rice producing area. A successful crop depends on several biological and physical factors including: weather conditions; water level fluctuations, turbidity and movement; and, soil conditions. Problems with any of these conditions can result in a poor crop.

2. PAST AND PRESENT USE

Wild rice is harvested using either the traditional canoe and flail method or one of the various types of mechanical harvesters. Mechanical harvesters are generally considered to be more efficient.

The only area in the Geraldton District which has been harvested with any regularity is the Arm Lake-Burrows Lake Area. Table 38 shows the harvest statistics for the years 1975 to 1979. Figure 26 shows existing and potential sites for wild rice crops in the Geraldton District.

TABLE 38: HARVEST STATISTICS FOR ARM LAKE-BURROWS LAKE AREA, 1975-1979

Year	Harvest (kg)	Value ($)
1975	136	209
1976	3,170	4,882
1977	P	----
1978	N/D	----
1979	4,746	7,309*

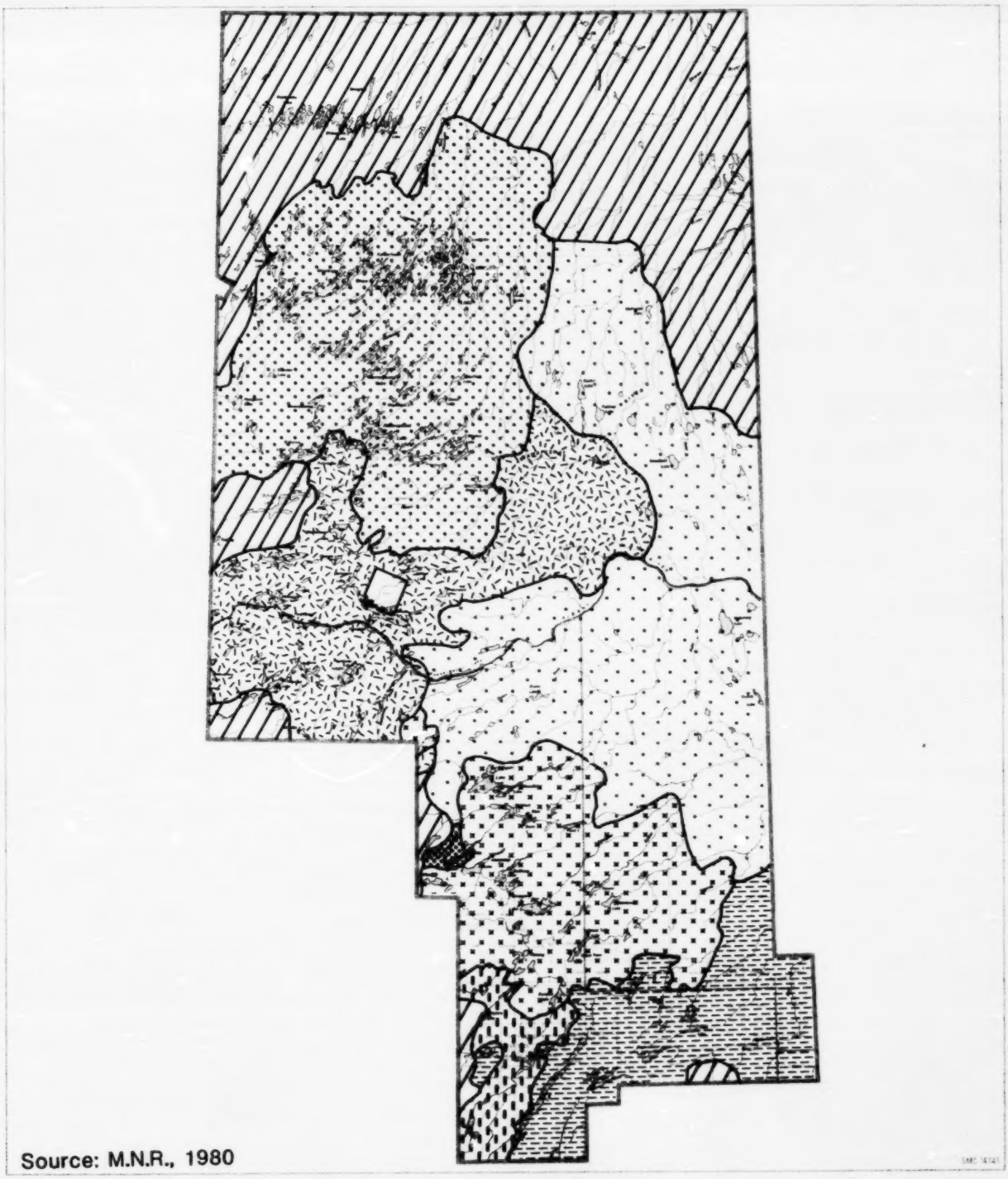
Source: MNR files
* *assume same unit price as 1976*
P *Poor Crop Year*
N/D *No Harvest Data*

Registered Trapline Management Areas

Figure 25

LEGEND

- Geraldton
- Longlac
- Auden
- Fort Hope
- Lansdowne
- Nakina
- Ogoki River
- Administered by other Districts



Source: M.N.R., 1980

40 0 40 80 120 km

20 0 20 40 60 80 m

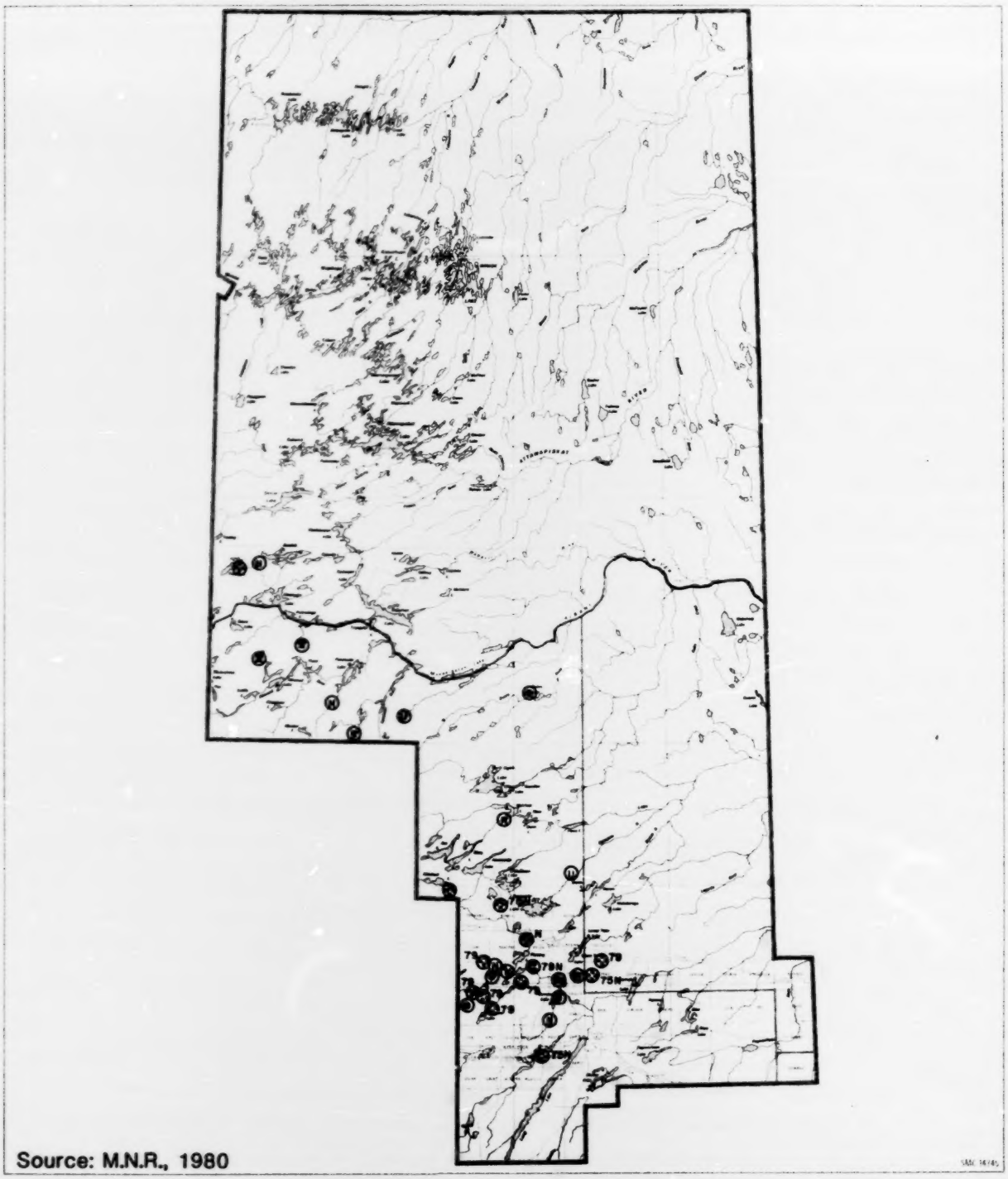
Figure 26

LEGEND

- General Location

Bed Status

- Commercial Quality
- N — Non-commercial Quality
- U — Unknown Quality
- Planted
- 75 — Year Planted



Source: M.N.R., 1980

40 0 40 80 120 km

20 0 20 40 60 80 m

3. POTENTIAL

In 1975, the Geraldton District planted seven lakes with wild rice. The results of these artificial plantings are unknown. In 1979, additional planting was done on selected lakes. The followup survey in 1980 showed that the results were unsuccessful.

The estimated potential harvest of the Arm Lake-Narrows Lake area is in the vicinity of 22,680 kg (under ideal weather and water conditions).

E:forest management

1. FOREST COVER

The forest in the Geraldton District forms part of two forest sections (as defined by Rowe, 1972), the Hudson Bay Lowlands Section and the Central Plateau Section. In the Hudson Bay Lowlands Section in the northeastern corner of the District, the vegetation has a general subarctic appearance because of the prominence of an open woodland of black spruce and tamarack in the muskegs and patterned fens. However, on the riverbank levees, where conditions of better drainage exist, forests of white spruce, balsam fir, trembling aspen, balsam popular and white birch occur, in quality similar to forests located in the Northern Clay Belt.

The remainder of the District is associated with the Central Plateau section, with the most prevalent working groups being jack pine, spruce, aspen and white birch. Mixture of black spruce and jack pine is common with trembling aspen and white birch occurring within the same association. Black spruce forest stands are well developed, from those occupying the shallow swamps to those of maximum productivity on the better drained level or undulating land.

2. PRODUCTIVE FOREST AREA

Within the Geraldton District, there exists 3,762,165 hectares of productive forest cover, (an area of productive forest land dedicated to the growing of merchantable timber), 603,590 hectares of which are

considered protection forest, (an area wholly or partially covered with woody growth, managed primarily to prevent erosion or exert any other beneficial influence (see Table 39). The above figures were compiled in part from existing forest resource inventory ledgers for portions of seven management units: Kimberly-Clark of Canada Ltd., Domtar Inc. Forest Products, American Can Canada Inc., Lake St. Joseph, Steel River, Pitopiko and Little Current while the remaining two management units; Dusey and Onaman are best estimates.

The Geraldton District is located within site regions 2E, 2W, 3E and 3W as identified by Hills, 1959. Site region 2E can be characterized by flat topography and poor drainage. The rivers cross this coastal plain in roughly parallel courses with a minimum of cross drainage, their low alluvial banks providing suitable conditions for good growth of forests. Back from the rivers lie immense areas of swamps, bog and muskeg.

Site regions 2W, 3E and 3W are characterized by a relatively level plateau-like country, extensive sand and gravel deposits and low rocky outcrops, and provide a favourable environment for the prevalent jack pine and spruce. The streams are relatively slow-flowing on their meandering courses over the plateau, except to the south where descent is rapid to Lake Superior.

The Ontario Land Inventory Timber Capability maps were not available for the entire Geraldton District. Therefore a map was prepared to illustrate the percentage of productive forest land by township and basemap (see Figure 27). Most of the district (as mapped) is 70-80% productive forest land. Areas that fall below this average are usually covered by immense swamps (eg. in the northeast section of the district) or have a considerable amount of area covered with water. The annual allowable cut for all nine management units in the Geraldton District is 3,123,389 net merchantable cubic metres (N.M.M.^{3}) (see Table 40). The annual allowable cut for the American Can of Canada Ltd. management unit is the only one that has received final approval. While the Steel River, Pitopiko and Kimberly-Clark of Canada Ltd. annual allowable cuts have not received final approval from all the necessary organization levels. Using the available information, a "best effort" type of allowable cut was compiled for the remaining portions of five management units in the Geraldton District: Domtar Inc. Forest Products, Lake St. Joseph, Onaman, Dusey and Little Current.

TABLE: 39 AREA SUMMARY FOR THE GERALDTON DISTRICT

	Area in Hectares			
	Production Forest	Protection Forest	Sub-Total	Total
All Management Units*				
Water - Crown			518,520	
- Federal Land			1,788	
- Total				520,308
Non-forested Land				
- Crown			7,538	
- Patented			1,332	
- Provincial Parks			53	
- Federal Land			331	
- Total				9,254
Non-productive forested land				
- Crown			867,349	
- Patented			2,014	
- Provincial Parks			5	
- Federal Land			6,302	
- Total				875,670
Productive forested land				
- Crown	3,120,835	601,251	3,722,086	
- Patented	14,177	964	15,141	
- Provincial Parks	18	nil	18	
- Federal land	23,545	1,375	24,920	
- Total	3,158,575	603,590		3,762,165
Outside of Management Units				
- water			531,992	
- Land			5,308,111	
- Total				5,840,103
DISTRICT TOTAL				11,007,500

Source: MNR files
**Management unit summary compiled from avaiable forest resources inventory information, where available*

TABLE 40: ANNUAL ALLOWABLE CUTS FOR THE GERALDTON DISTRICT

Management Unit	Available AAC Hectares (ha)		Available AAC (N.M.M.^{3})		AAC TYPE
	Conifer	Hardwood	Conifer	Hardwood	
Kimberly-Clark of Canada Ltd.	13,742	4,473	1,779,140	677,078	B
Domtar Inc., Forest Products	314	151	31,430	17,619	C
American Can of Canada Ltd.	590	616	130,194	87,794	A
Lake St. Joseph C.M.U.	1,452	268	112,380	42,023	C
Onaman C.M.U.	7	2	662	286	C
Pitopiko C.M.U.	32	3	3,078	541	B
Dusey C.M.U.	385	138	49,445	16,098	C
Little Current C.M.U.	903	537	112,607	60,788	C
Steel River C.M.U.	12	5	1,532	694	B
Geraldton District Total	17,437	6,193	2,220,468	902,921	

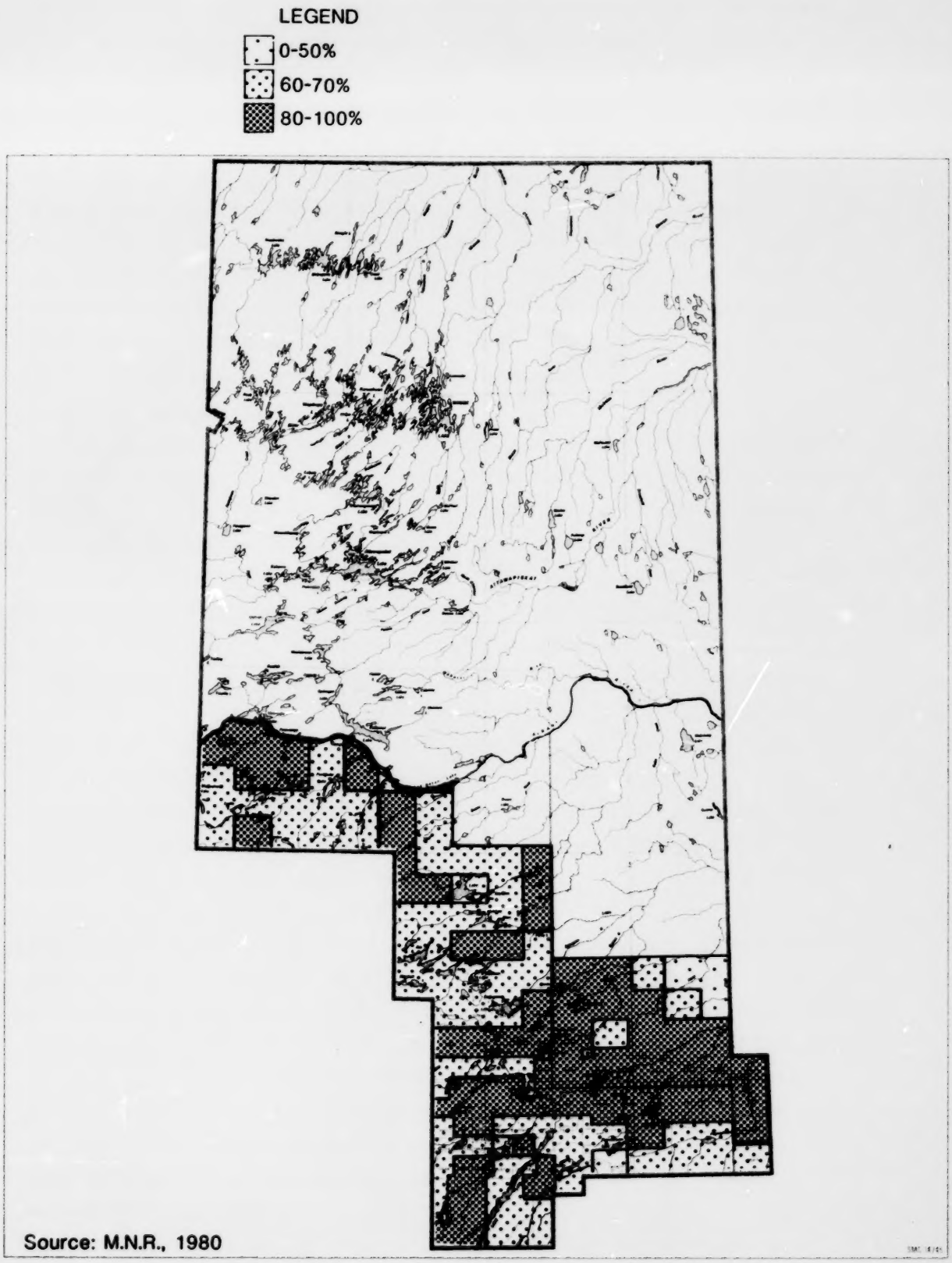
Source; MNR files

AAC TYPE 'A' - approved allowable cut

'B' - unapproved allowable cut - cut may not be approved by all of the necessary organization levels to qualify for category A

'C' - no allowable cut - A best effort with the available information was used to derive a normal AAC

Productive Forest Areas Figure 27



3. PRESENT SITUATION

a. Management Units

The Geraldton District has portions of nine management units (see Figure 28). Three are under timber licence to private companies. They are Kimberly-Clark of Canada Ltd, Domtar Inc. Forest Products and American Can of Canada Ltd. The six Crown Management Units are: Dusey; Pitopiko; Lake St. Joseph; Little Current; Onaman; and, Steel River.

Forest operations have been exclusively concentrated in the Company licence areas, while the Crown Management Units have never been logged. The Geraldton District staff manage four of the units (Kimberly-Clark of Canada, Dusey, Lake St. Joseph and Little Current). The remaining units coincide with larger segments of their respective units in the adjacent Districts of Hearst, Terrace Bay and Nipigon.

b. Harvesting Operations

Presently, American Can management unit has one camp located in the centre of their licence. Their annual cut is dispersed throughout 75% of their licence, with 24,069 N.M.M.^{3} to 36,104 N.M.M.^{3} being harvested from the Geraldton District portion. Black spruce is the predominant species harvested making up 50-75% of the total, followed by aspen and jack pine. Weldwood of Canada Limited operating out of Longlac is presently in the final year of a Third Party Agreement with American Can. They will have harvested 45,732 N.M.M.^{3} of treelength aspen for their mill in Longlac.

This Districts portion of Domtar Inc. Forest Products licence was active in the 1950's and 1960's with the last operation being in 1970. Future operations are planned for the 1981-82 and 1982-83 seasons. In addition, Multiply Plywoods Limited has a Third Party Agreement with Domtar to harvest poplar and white birch veneer for their plywood mill in Nipigon.

Harvesting has occurred on the Kimberly-Clark of Canada Ltd. licence area since before 1940 (see Figure 29). Today they operate thirteen camps, each averaging approximately 850 hectares of cutover a year. During the 1979-80 season, 1,377,698 N.M.M.^{3} of jackpine, spruce and balsam fir, and 177,173 N.M.M.^{3} poplar was harvested. Under a third party agreement, Lecour Lumber Company have a commitment to harvest 72,208 N.M.M.^{3} of softwood from the eastern portion of the Kimberly-Clark licence. Weldwood have a similiar agreement to harvest 19,255 N.M.M.^{3} of poplar annually from the same area.

Approximately 1,900 N.M.M.^{3} was harvested from 75 district cutting licence (DCL) areas. Of the 75 D.C.L.'s 73 were for personal use. A total of 248 fuelwood permits were issued during the 1979-80 season.

Table 41 summarizes volume and area data for Order-in-Council and District Cutting Licences (D.C.L.'s) in the 1979-80 year.

Table 42 summarizes the area cutover between 1938 and 1979, in the Geraldton District.

TABLE 41: CROWN TIMBER LICENCES, 1979-80

Management Unit	Order-in-Council Licences			District Cutting Licences		
	Volume Cut (N.M.M.^{3})	Licenced Area (ha)	No. Licences	Volume Cut (N.M.M.^{3})	No. Commercial Licences	No. Personal Licences
Kimberly-Clark of Canada Ltd.	1,633,221	2,960,780	4	1,200	2	43
American Can of Canada Ltd.	36,104	144,099	2	500	NIL	20
Domtar Inc., Forest Products	NIL	52,798	2	200	NIL	10
TOTAL	1,669,325	3,157,677	8	1,900	2	73

c. Forest Industries

Timber harvested in the Geraldton District is either processed within the district or transported directly to a processing mill outside of the District. Table 43 lists the wood using mills, along with their annual production, in the Geraldton District. The following mills outside of The Geraldton District are dependent to some degree on their wood supply from this district:

1) American Can of Canada Ltd. - pulpmill in Marathon, Ontario;

2) Domtar Inc. Forest Products - pulpmill in Red Rock, Ontario:

Timber License Boundary

Figure 28

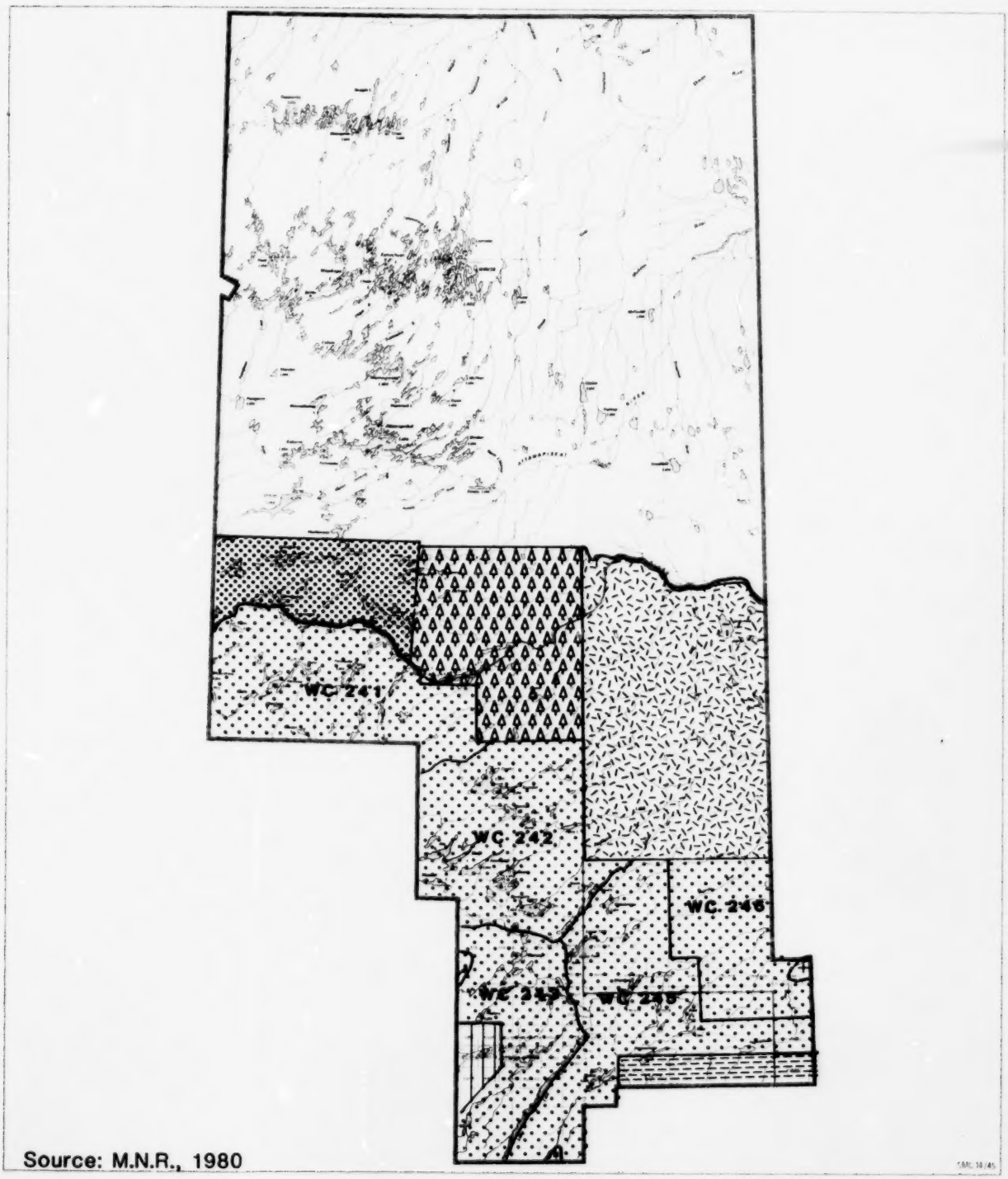
LEGEND

Company License Areas

- Kimberly Clark of Canada Ltd.
- Domtar Inc. Forest Products
- American Can of Canada Ltd.
- WC 241 Working Circle Number

Crown Management Units

- Dusey
- Lake St. Joseph
- Little Current
- Onaman
- Pitopiko
- Steel River



Source: M.N.R., 1980

40 0 40 80 120 km
20 0 20 40 60 80 m

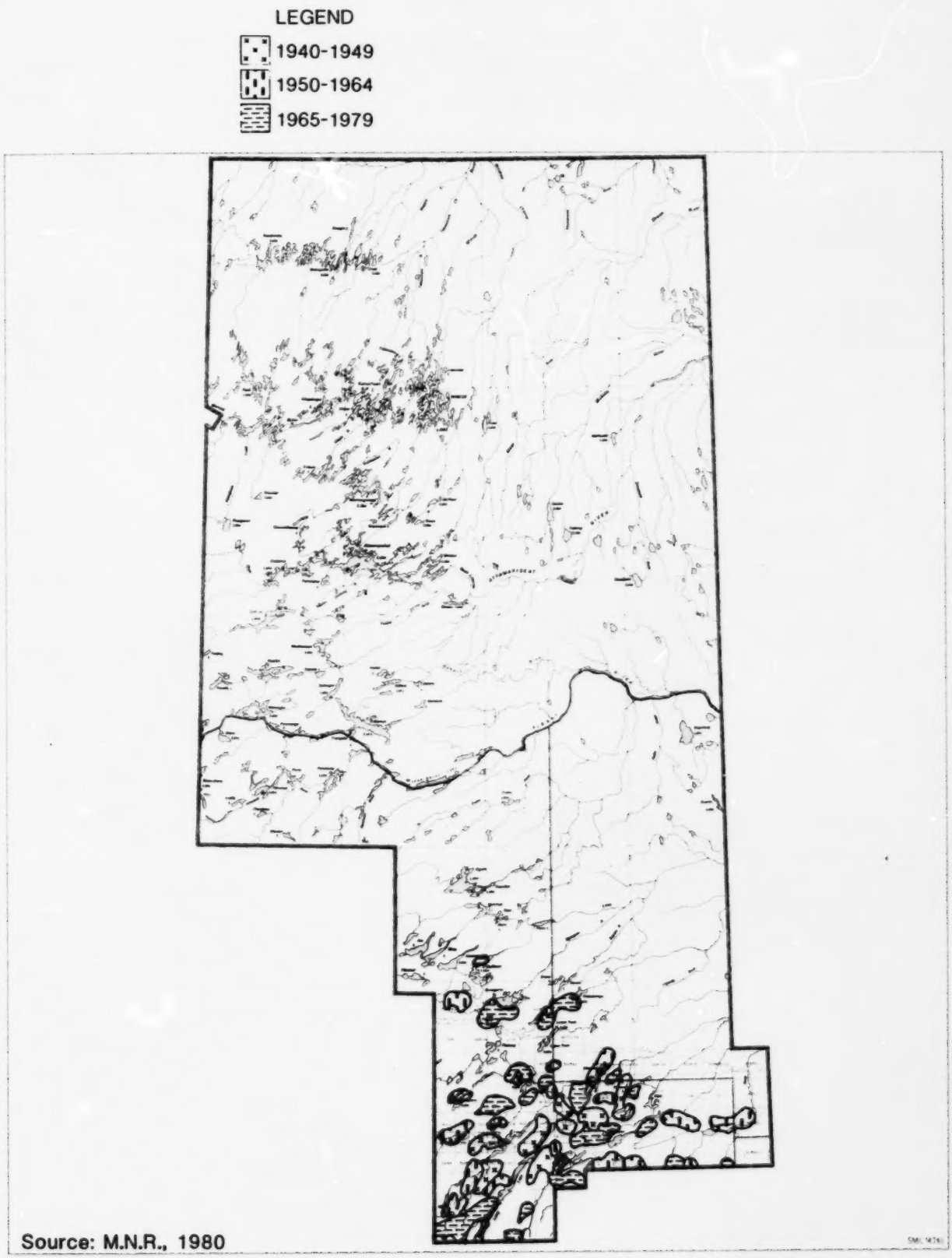

LEGEND
1940-1949
1950-1964
1965-1979
Source: M.N.R., 1980
40 0 40 80 120 km
20 0 20 40 60 80 m

TABLE 42: SUMMARY OF CUTOVER AREA BY MANAGEMENT UNIT IN THE GERALDTON DISTRICT, 1938-1979

Management Unit	Area Cut by Year in Hectares			Total
	1938-49	1950-64	1965-79	
Kimberly-Clark of Canada Limited	19,412	74,073	106,634	200,119
Domtar Inc., Forest Products	944	9,528	3,168	13,640
American Can Canada Inc.	680	4,728	1,644	7,052
TOTAL	21,036	88,329	111,446	220,811

Note: During these periods there was no forest harvesting operations on the Dusey Management Unit, Little Current Management Unit, Pitopiko Management Unit, Onaman Management Unit, Steel River Management Unit and the Lake St. Joseph Management Unit.
Source: MNR files

3) Kimberly-Clark of Canada Ltd. - pulpmill and sawmill in Terrace Bay, Ontario;
4) Multiply Plywoods Ltd. - plywood mill in Nipigon, Ontario;
5) Great West Timber Ltd. - sawmill in Thunder Bay, Ontario; and
6) Lecours Lumber Ltd. - sawmill in Calstock, Ontario.

Figure 30 shows the location of forest industries and the direction of wood flow.

TABLE 43: WOOD USING MILLS IN GERALDTON DISTRICT, 1979

Name and Location	Annual Volume Production		Main Source of Wood (Management Unit)
	Dimension Wood	Pulp Chips	
Sawmill			
Kimberly-Clark of Canada Ltd. Longlac	47,093 M.B.M.	59,246Bone dry tons	Kimberly-Clark of Canada Ltd.
Waferboard Mill			
Weldwood of Canada Ltd. Longlac	114,996 M.S.F. 3/8"	17,388Bone dry tons	Kimberly-Clark of Canada Ltd.
Veneer Mill			
Weldwood of Canada Ltd. Longlac	42,077 M.S.F. 3/8"		Kimberly-Clark of Canada Ltd.
Sawmill			
R. Fex Geraldton	44 M.B.M.		Kimberly-Clark of Canada Ltd.
Sawmill			
G.Klinge & Son Wildgoose Lake	no operation in 1979		
Sawmill			
A. Wilson, Geraldton	no operation in 1979		
Totals	47,137 M.B.M. 157,073 M.S.F.	76,634	

Source: MNR files
M.B.M. = Thousand Board Feet
M.S.F. = Thousand Square Feet

Wood Flow and Wood Processing Plants

Figure 30

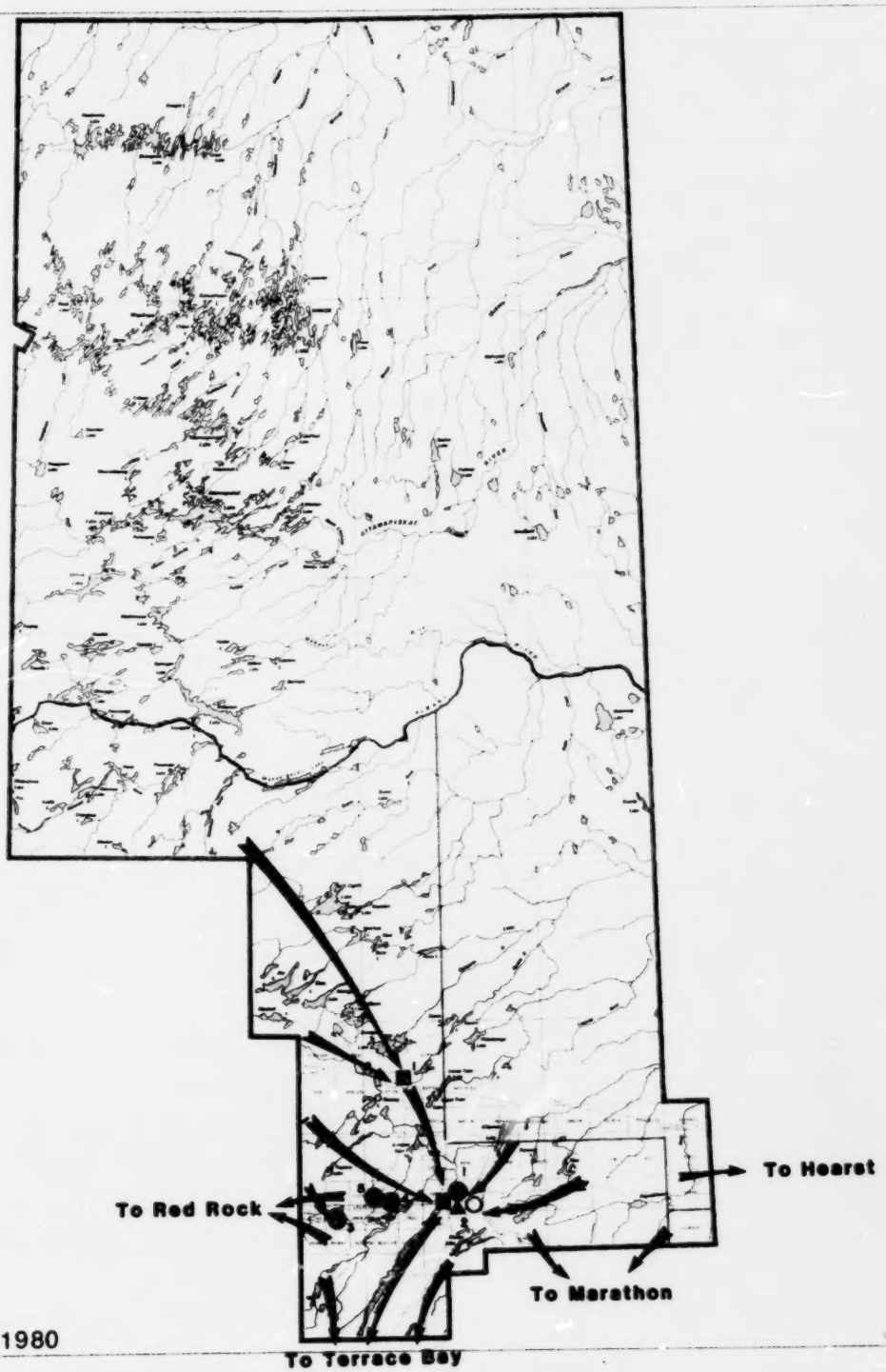
LEGEND

Wood Processing Plants

- ▲ Plywood
- ● Sawmill
- ■ Slasher
- ○ Waferboard

Processing Plant Ownership

1. Kimberly Clark
2. Weldwood
3. G. Klinge & Son
4. R. Fex
5. A. Wilson



Source: M.N.R., 1980

40 0 40 80 120 km
20 0 20 40 60 80 m

d. Silvicultural Treatment

Between 1950 and 1956, Kimberly-Clark of Canada was the only organization carrying out regeneration work in the Geraldton District. In 1951, they established a tree nursery 16 km. east of Longlac which presently produces 1.3 million spruce and jack pine seedlings annually. The Department of Lands and Forests started participating in silvicultural operations in 1957 and now the Ministry of Natural Resources carries out most of the silvicultural work in the District. Table 44 summarizes the silvicultural operations in the district between 1974 and 1979.

TABLE 44: SUMMARY OF SILVICULTURAL OPERATIONS IN THE GERALDTON DISTRICT 1974-1979

Treatment	Area in Hectares	
	Total	5-Year Annual Average
Regeneration		
- planting	6,451	1,290
- seeding	5,966	1,193
- scarification	1,868	374
- modified harvest cutting	1,145	229
Sub-Total (regeneration)	15,430	3,086
Tending	2,447	489
Site Preparation	13,407	2,681
Grand Total	31,284	6,256

Source: MNR files

During the period 1980 to 2000, the full allowable cut will be harvested from the Kimberly-Clark of Canada Limited Managment Unit and the American Can of Canada Limited Management Unit. This level of harvesting represents an area of 14,332 hectares conifer and 5,089 hectares hardwood. At present no other harvesting activity is planned for the remaining management units in the Geraldton District for the same period. The following tables 45 and 46 illustrate the level of annual silviculture work (improvement operations) required to maintain the planning area at the full normal allowable cut level.

TABLE 45: SUMMARY OF ANNUAL REGENERATION NEEDS FOR THE GERALDTON DISTRICT 1980-2000

	Area in Hectares
Total cut per year	19,421
Not treatable	3,884
Natural no cost regeneration	3,884
Requires regeneration treatment	11,656

Source: MNR files

TABLE 46: ANNUAL REGENERATION REQUIREMENT BY TREATMENT FOR THE GERALDTON DISTRICT 1980-2000

Treatment	Number of trees		Area (ha)
	Total (1,000's)	Species	
Planting (nursery stock)	3,800	2,800 Sb 1,000 Sw	1,937
Planting (containers)	3,600	3,100 Sb 500 Pj	1,827
Aerial/Hand seeding			3,508
Seeding with S.I.P.			1,462
Scarification for natural			364
Modified harvest cutting			2,558
TOTAL			11,656

Source: MNR files

Additional improvement operations, ie. site preparation and tending, will be assessed from year to year, to better aid the establishment and the continued survival and growth of regenerated areas.

To maintain the normal allowable cut level for the Geraldton District, silvicultural activity must increase to ensure this cut level is maintained. Failure to meet these silvicultural targets will transform into a reduction of the allowable cut and as a result a reduction of this forest industry in the district.

4. ECONOMIC IMPORTANCE

As mentioned previously, there are six wood-using mills in the Geraldton District and six mills outside which are dependent upon wood harvest in the district. Total employment in the wood industry (including manufacturing - related employment) is 1343 people Wages paid annually by employers are close to 40,000,000 dollars.

Exports from the district (raw wood, dimension lumber, plywood and waferboard) are valued at close to 80,000,000 dollars.

5. FUTURE DEVELOPMENTS

a. Forest Management Plan

A twenty year forest management plan for the Kimberly-Clark of Canada Limited licence area is currently being jointly written by the company and the Ministry of Natural Resources. Under this plan the unit will be divided into six working circles-portions of five in the Ministry's Geraldton District, portions of two in the Nipigon District and one in the Terrace Bay District.

b. Road Construction

All forest access roads within the Kimberly-Clark, Domtar and American Can management units are built and maintained by these three forest operators. The primary objective of this road network is to provide access to the forest stands scheduled for logging and to provide roads necessary for long term development. Figure 8 illustrates the future road construction program for the period 1980 to 1994.

c. Future Demand

Geraldton District is presently committed to a timber target of approximately 2,010,493 N.M.M.^{3} per year in 2020 (21% hardwood, 79% softwood). The calulated normal annual allowable cut is 3,123,389 N.M.M.^{3} (29% hardwood, 71% softwood). A significant portion of this calculated annual allowable cut is located in remote areas and as a result is presently inaccessible to any harvesting operations. These target figures are estimations only and may change depending on fluctuations in the economy and availability of more up-to-date data

At the present time, the variety of wood products which are derived from the productive forest land in the district are limited due to present levels of technology and economic feasibility. For example, poplar that is 8 inches or less in diameter, has at present, very limited use by the

wood-using industries in the district. All of the productive forest land in the district is required to supply existing wood-using industries. However, there are definite indications that with improvements in technology and market conditions, wood that is presently unmerchantable may become marketable and significantly increase volumes harvested per unit area. As an example, Kimberly-Clark is considering the feasibility of using poplar in their pulping process at the mill in Terrace Bay.

Kimberly-Clark of Canada Limited plans to gradually shift forest operations from the southern sections of the district to the northern part with a dramatic increase in logging activities. Increased harvesting will necessitate a commensurate increase in silvicultural activity.

Presently, the local forest using industries require the full allowable cut to supply their mills. Any future erosion of this base will transform into a reduction of the forest industry in the district.

F:minerals and aggregate

1. HISTORY OF MINING ACTIVITY

Gold is the only metal to have been produced in the Geraldton District in significant quantities; all of this production came from mines in the vicinity of the town of Geraldton. A total of 92,244,571 grams of gold were won from these mines from 1934 to 1968. These mines are hosted in the Beardmore-Geraldton belt of metavolcanic and metasedimentary rocks.

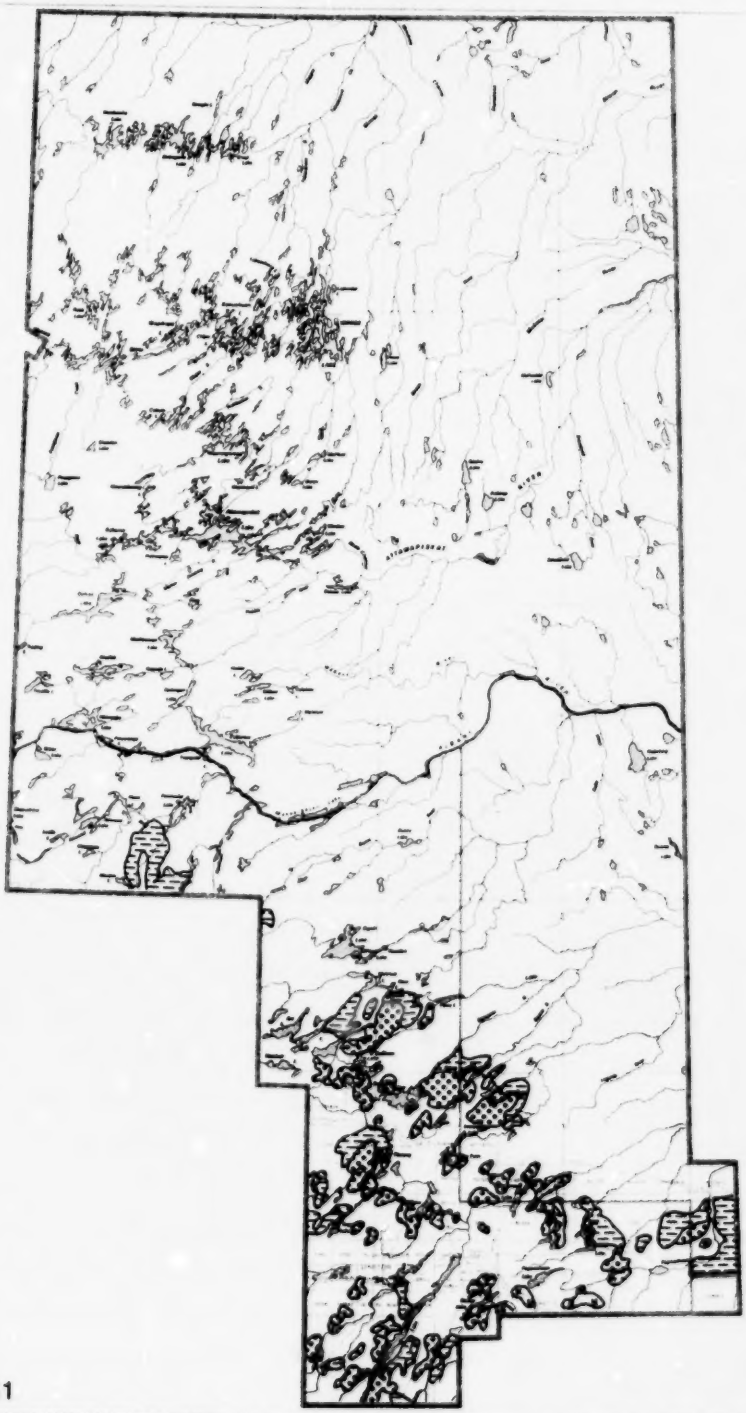
Although production was not recorded until 1934, mining activity commenced in the Little Long Lac area as early as 1900 when claims were staked near Barton Bay on sedimentary iron-bearing rocks. As these rocks were not ore grade the claims were dropped. In 1916, prospecting for gold was started by Tony Oklend; this was followed in subsequent years by numerous other prospectors including T. A. Johnson, W. W. Smith, F. MacLeod and A. Cockshutt. The work of these prospectors led to the discovery of what eventually became producing mines including Little Long Lac, Hardrock,

LEGEND

Kimberly Clark 1980-1985

Kimberly Clark 1986-1994

American Can 1988-1997



Source: M.N.R., 1981

40 0 40 80 120 km

20 0 20 40 60 80 m

Bankfield, MacLeod-Cockshutt and Talmora. Many of these mines were in production for a number of years. Production in the district commenced in 1934 at the Little Long Lac Mine; the last year of production there was in 1956. The most prolific producer was the MacLeod-Cockshutt from which 45,900,278 grams of gold were won from 1938 to 1968. This represents almost half of the 92,244,571 grams of total production for the area. The closing of this mine in 1968, marked the end of current mining in the Geraldton District.

Although gold was still known to be in place, it could no longer be mined at a profit with the price of gold pegged at $U.S. 35.00 per ounce. Now that the price of gold is up to the $700.00 per ounce range, it is anticipated that many of these gold properties will warrant reexamination.

2. MINERALS

a. Bedrock Geology

About 80 percent of the Geraldton District is underlain by Precambrian rocks which, except for scattered Middle and Late Precambrian (Proterozioc) diabase dikes, are all Early Precambrian (Archean); these rocks are between 2.5 to 2.9 billion years old. The remaining 20 percent of the bedrock, which occupies the eastern margin of the district, is Paleozoic in age, that is younger than 500 million years old.

The oldest rocks are represented by six easterly trending metavolcanic-metasedimentary belts which are separated from each other by rocks of granitic composition. From north to south these belts, commonly referred to as "greenstone belts", are designated the Kasabonika Lake-Ekwan River belt; the eastern section of the Wunnummin Lake belt; the Miminiska Lake-Fort Hope belt; the Melchett Lake belt; the eastern end of the Little Marshall Lake belt; and the eastern end of the Beardmore-Geraldton Belt. These linear terrains comprise mainly metamorphosed volcanic flows and pyroclastic rocks of intermediate to mafic composition. Included with these rocks are numerous gabbroic intrusions which can be important for hosting nickel deposits.

Within the greenstone belts are zones of felsic flow and pyroclastic rocks which are important in the exploration for massive sulphide deposits of copper, lead and zinc and for gold deposits. They generally correspond to areas of high or moderate mineral potential (see Figure 32). The metamorphosed sedimentary rocks consist mainly of greywacke, siltstone,

and conglomerate. All rock units of the "greenstone belts" are considered to have originated in a submarine environment. The areas between the metavolcanic-metasedimentary belts comprise granitic rocks. The granitic rocks occur either as massive to weakly foliated batholiths formed from the partial melting of pre-existing sedimentary or volcanic rocks. Subsequent erosion has exposed them on the earth's present surface.

During this period of granitoid emplacement, the volcanic and sedimentary rocks were folded to form linear mountain belts which remain today as the "greenstone belts".

A small alkalic-carbonatite intrusion occurs at Chipman Lake; the age of this body is not certain.

The Paleozoic rocks are relatively flat lying and have been generally undisturbed since their time of deposition some 300 to 400 million years ago. They include rocks of Ordovician and Silurian ages and are composed of sandstone, limestone, and dolomite. Fossils are common.

b. Mineral Potential and Exploration

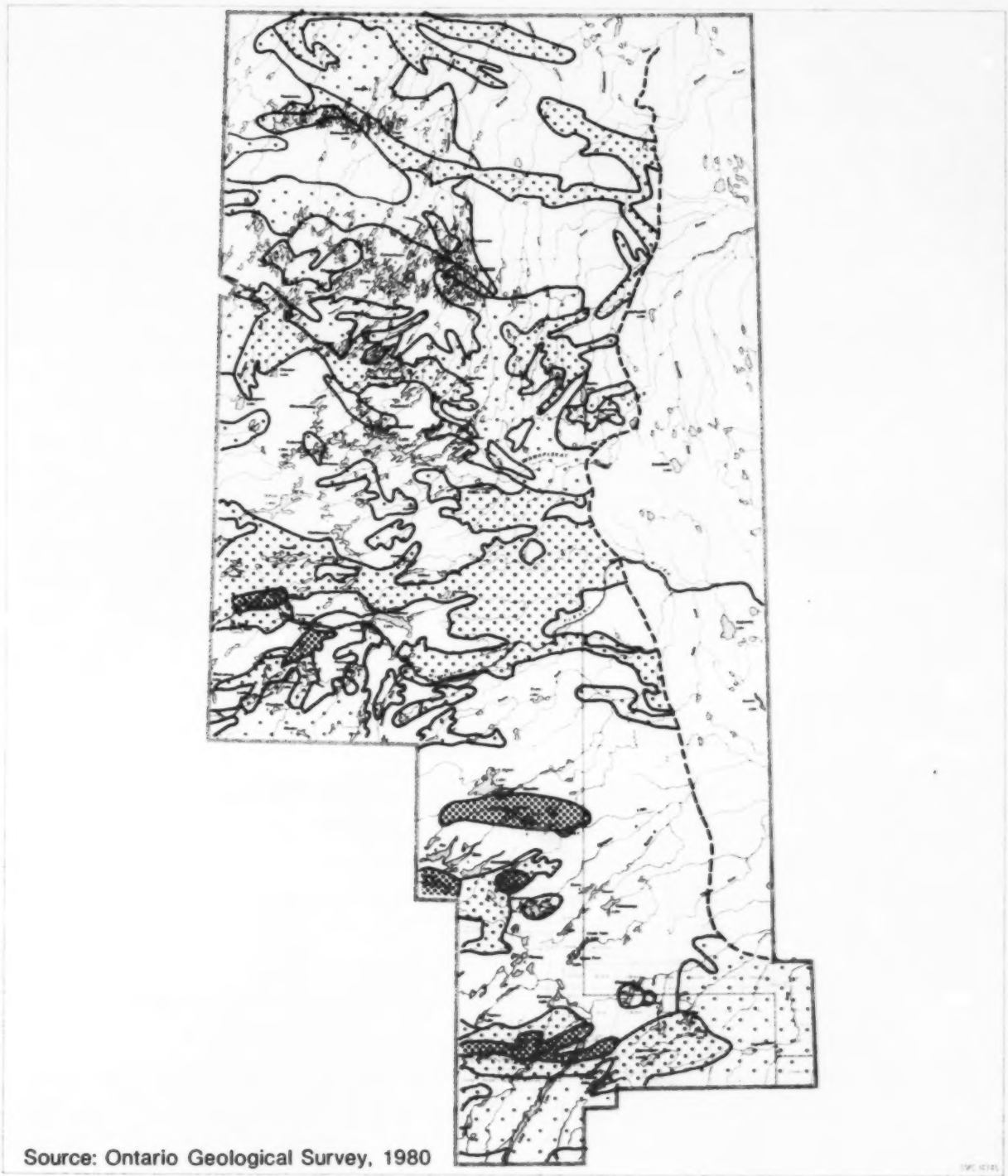
The traditional system of describing an area's mineral potential tends to designate metavolcanic terrains as moderate to high and the intervening granitic areas as having a low or, in many instances, unknown potential. One must, however, not totally rule out granitic terrains as they have certain potential for uranium and porphyry type deposits such as are found in British Columbia. Although porphyry type deposits have not yet been found in Precambrian rocks, there is the possibility they exist. Metals such as copper, molybdenum and even gold can be won from porphyry deposits which are generally large tonnage low grade.

The preceeding would suggest that there should be a degree of flexibility when establishing land use plans, in that, areas with some known mineralization may currently have a low potential for ore but these deposits may become economic in the future. This may be caused by changes in markets, metal prices, transportation and uses.

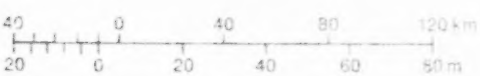
It should also be realized that areas which have a moderate to high potential for mineral deposits may not have the same potential for ore. The main reason for this would be remoteness from markets giving high costs to transportation. Once again, however, flexibility should be retained as remote mineral deposits could in the future become ore for reasons

LEGEND

Rank	Classes
High	1,2
Moderate	3,4
Low	5,6
Unknown	7
Paleozoic Boundary	



Source: Ontario Geological Survey, 1980



already cited, or for the strategic value of certain commoditis. Lithium and tantalum are examples.

Figure 32 delineates the mineral potential of Geraldton District as compiled from Mineral Potential Maps. The areas assigned the highest mineral potential occur near the town of Geraldton with numerous past producing gold mines.

Other areas rating a high potential are the felsic volcanic rocks in Kowkash Township, the O'Sullivan Lake area, the Marshall Lake area, Melchett Lake, Auger Lake and the Mimininska Lake area. Also near the town of Geraldton, iron-bearing rocks have the potential to be ore in the future.

Mineral exploration projects in 1980 by numerous companies are examining the areas of high potential with encouraging results.

A gold deposit held by Consolidate Louanna Gold Mines Limited is reported to have 102,700 tonnes averaging 10 grams per tonne. Plans are underway to commence mining operations.

NWT Copper Mines Limited has a massive sulphide deposit in the Marshall Lake-Summit Lake area which is currently optioned to Sherrit Gordon Mines Limited. Diamond drilling on a previous option to Imperial Oil Limited indicate reserves of 2,005,380 tonnes with 1.22 percent copper, 4.2 percent zinc, 69 grams silver per tonne and 0.34 gram gold per tonne.

In the Mimininska Lake area, New Jersey Zinc Exploration Co. (Canada) Limited is examining a gold-antimony base metal deposit.

The past-producing gold mines in the vicinity of Geraldton must now be considered as potential producers of gold again due to the great increase in gold prices in the last few years. Here is an excellent example for keeping a certain degree of flexibility in land use. These mines were closed because the price of gold was fixed at $U.S. 35.00 per ounce and the gold deposits could not be mined at a profit. At the current price, however, they may once again provide ore.

Also, in the Geraldton area, the Algoma Steel Corporation Limited owns in part and leases in part an iron property which has an estimated open pit reserve of 97,000,000 tonnes.

In summary, there are several areas in the Geraldton District which have a high potential to host producing mines. These remaining areas of low to moderate potential are in many cases unknown quantities and these are the areas where a degree of flexibility should be allowed in land use.

3. AGGREGATES

a. Surficial Geology

The surficial deposits of the Geraldton District were formed primarily during the Pleistocene Epoch. All of the Pleistocene deposits were formed during the Wisconsin glaciation. Individual ice lobes advanced and retreated in a quite complex fashion producing a variety of deposits typical of continental glaciation.

Much of the district is underlain by a mantle of ground moraine, essentially, a silty, sandy till. Till is a nonstratified, not obviously sorted, sediment deposited directly by glacier ice. The depth of this deposit is quite variable and in some areas thins to a point where bedrock becomes the dominant feature. It should be noted that till in the northeast part of the district is clay-rich... the result of the reworking of fine-grained glaciolacustrine sediments by glacier ice.

Parts of several major end-moraine systems, oriented for the most part northwest-southeast or north-south occur within the district. The Nakina I and II morainic complex, which trends northwest-southeast from Marshall Lake to Pagwachuan Lake, is perhaps the most extensive. The Agutua Moraine trending northwest-southeast is located in the west central part of the district. A minor moraine, basically an ill-defined belt of hummocky moraine, trends north-south to Chipman Lake. Where these discontinuous, linear deposits have been exposed to and modified by lake action, a bouldery lag concentrate and associated stratified sand and gravel are characteristic.

The Onaman Moraine, an interlobate deposit which consists generally of stratified sand and gravel, trends east-west from Rupert through Kowkash and Suni Townships. A moraine consisting of low lying hills of sand and gravel, and which trends northeast-southwest through the Wababimiga Lake area, also is considered an interlobate deposit.

Glaciofluvial deposits in the form of eskers and outwash plains are relatively abundant in Geraldton District. It is considered that eskers

represent former channel fillings of ancient superglacial, englacial and subglacial streams. These deposits generally consist of poorly-sorted, stratified sand and gravel, and locally, are carbonate-rich due to the presence of Paleozoic limestone clasts. The remaining clasts generally are Early Precambrian granitic and volcanic rocks. Major breaks in the relief of the northern part of the district are due to south to south-west trending eskers and esker-like ridges which tend to merge towards the western boundary. Eskers are also common in the southern part of the district. Glaciofluvial outwash, in general, refers to sand and gravel deposited by meltwater streams beyond the margins of the glacier. These deposits, characteristically, are well-sorted and stratified. Rather extensive outwash deposits, associated with the Nakina Moraine, may be observed in Kowkash, Rupert, Esnagami, Exton, Nakina, Bain and Daley Townships. Also, notable deposits occur to the north and west of Pagwachuan Lake. Interbeds of silt or clay suggest that the influence of a glaciolacustrine environment was important during the deposition of these outwash sediments (i.e., outwash delta sedimentation). Glaciofluvial deposits usually comprise important source areas for aggregate extraction.

Major glaciolacustrine deposits occur flanking the Nakina Moraine, east of and extending to the north of Wababimiga Lake, and in the Ogoki Lake area. Fine sand, silt and clay are the most common sediments found in these deposits, and generally reflect deposition in relatively low energy, deep water glacial lake environments. Glaciolacustrine deposits generally are not good for aggregate due to the fine-grained nature of the material.

Recent organic deposits, that is, peat and muck, occur throughout the district. Generally, peat consists of partially decomposed organic debris which has accumulated under deoxygenated and saturated conditions. Peatlands comprise an extensive veneer over much of the northern part of the district. The area is relatively flat and featureless with peat ranging in thickness from one to five metres. Minor peat deposits can be found in poorly drained depressions.

b. Aggregate Potential

The major souce of aggregate is the sand and gravel contained in the end and recessional moraines and eskers deposited by the glaciers of the Pleistocene Epoch. Numerous gravel pits east of Longlac are located in ground moraine which according to the Land Classification maps is deep and therefore, lends itself to the removal of aggregate.

Moraine and esker deposits are in abundance in the Geraldton, Longlac, Nakina vicinity. Pits in the northern part of the district could be established on the eskers and moraines should the need arise in the future.

Many eskers may also be used for potential road beds for future access to northern areas although this action negates any future aggregate removal so long as the road is needed.

c. Present Use

Readily available sources of gravel have proven to be a definite asset in the economic development of this area especially in the woods industry. Kimberly-Clark Pulp and Paper Company is our major resource extractor and they rely heavily on the availability of gravel for the construction and maintenance of primary and secondary haul roads. Each year they construct and/or maintain hundreds of miles of road and haul approximately 275,000 cubic yards of material from the 4 unspecified pit areas and 6 individual pits which they have under Quarry Permit. They pay no royalty on this material provided their roads are left open to the public on a reasonable basis.

Local construction also relies heavily on the availability of a reliable aggregate source. Municipalities, contractors and private individuals account for an average issuance of 55 Quarry Permits annually and remove approximately 154,000 cubic yards of material. Of this total only 21,100 cubic metres are subject to royalities ($23/m^3$) resulting in payments of about $8,250.00 to the Crown. Municipalities obtain their aggregate royalty-free provided it is used for municipal purposes and an individual may obtain up to 500 cubic yards royalty-free if it is used for his own purposes.

In this District we also have 48 areas designated as gravel reserves for the Ministry of Transportation and Communications. These are concentrated along the corridors of Highways 11, 584, 625 and 634 with others found near the remote northern communities of Lansdowne House (1), Kasabonika (1) and Webequie (3). The annual removals by MTC are not known.

A considerable amount of aggregate in the area immediately surrounding Geraldton is extracted from patented mining claims which this Ministry has no control over, nor records of removals. It is estimated that several thousand cubic yards of material are removed from pits on private land each year.

The demand for aggregate in the Geraldton District is not known to fluctuate considerably. The number of pit openings and closures (with the exception of Kimberly-Clark) is minimal and it is felt our current aggregate supply can meet the needs of the forseeable future.

Factors affecting the demand for aggregate would be limited to 2 major areas: 1) local construction; and

2) road construction for resource extraction

The distribution of pits and reserves are shown in Figure 33.

4. PEAT

Current policies of the Ministry of Natural Resources indicate that studies of peat potential will take place over the next few years. These studies will include inventories and marketability of peat as an energy source to increase Ontario's self-sufficiency in energy. The present target is for Ontario to become 35 percent energy self-sufficient by 1995 and much of this increase is to be attained by the use of peat.

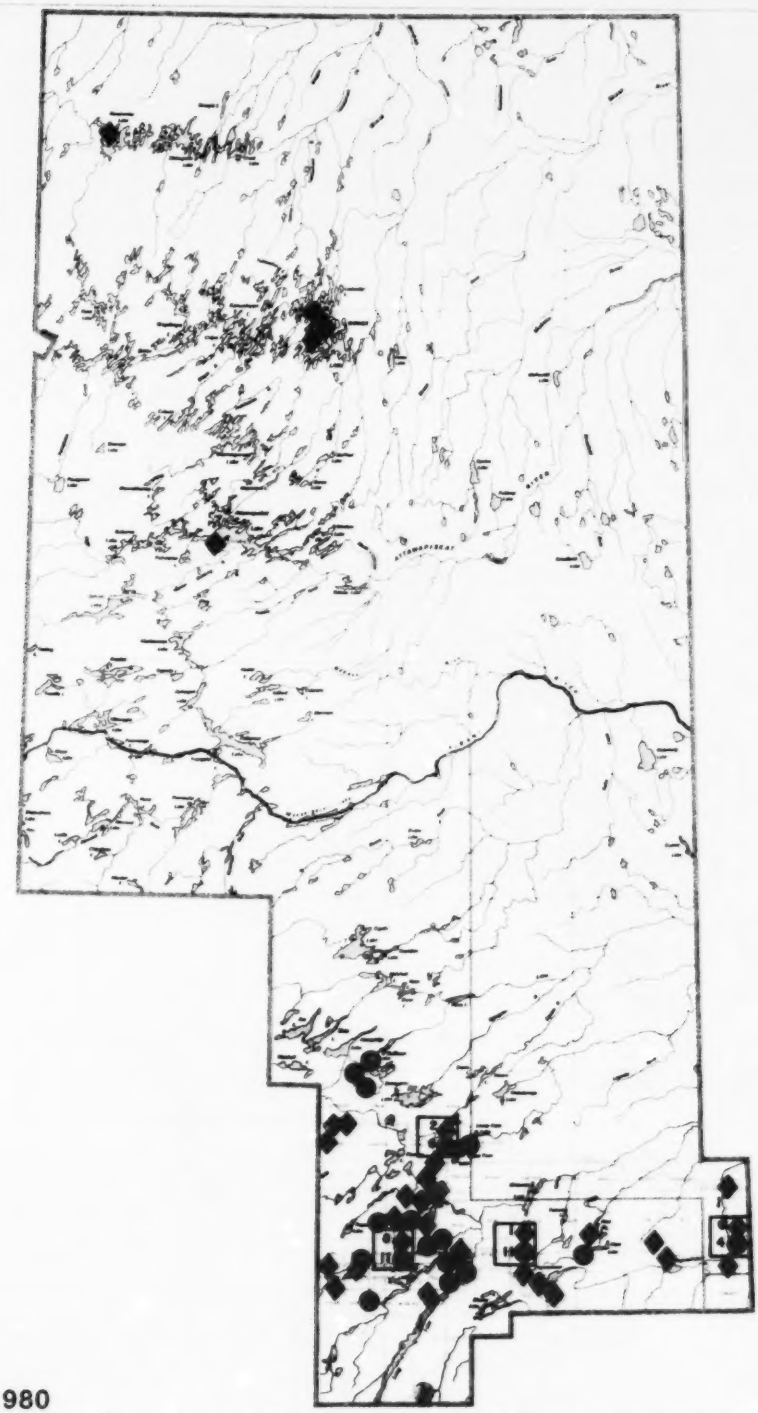
Numerous bogs in the Geraldton District are thought to contain peat, particularly in the northeastern quarter of the district.

Notes:

(1) Ontario Ministry of Natural Resources, Towards the 80's A Guide to the Organization and Management System (February, 1979)

LEGEND

- MTC Gravel Pit or Reserve
- Private Gravel Pit
- Number of Pits within Boundary of Square



Source: M.N.R., 1980

40 0 40 80 120 km
20 0 20 40 60 80 m

A: introduction

This section of the background report is meant to highlight some of the problems and issues which affect resource development and concern the Ministry of Natural Resources in the preparation of the Geraldton District Land Use Plan. The list is not comprehensive and it is meant to highlight those problems and issues which will affect the preparation and implementation of the land use plan.

It should be noted that the land use plan will not be able to solve all problems. Many conflicts that result between different resource users are management concerns and, as such, are too detailed to be dealt with at the land use plan level. In general, the plan can deal with those issues which concern uses requiring large land areas.

B: land management

1. INDIAN LAND CLAIMS

North of the Albany River there are three Indian communities (Summer Beaver, Lansdowne House, Webequie) located on Crown land. The question of granting reserve status to these communities has been under consideration for some time with little apparent headway.

An associated problem with several of these communities is the attempt to lay exclusive claim to all of the natural resources within a 30 mile radius. The question of granting reserve status and exclusive use of resources cannot wholly be dealt with by the land use plan.

2. COTTAGING

At present there appears to be a surplus of cottage lots available in the Geraldton District; however, in some communities (eg. Longlac) there is an unsatisfied demand. This is the result of the fact that cottage lot development has occurred in the vicinity of Geraldton and Nakina and the people from Longlac have been hesitant to acquire property in these subdivisions. The reasons are twofold: 1) increased travel time; and 2) a certain feeling of territoriality, that is, each community has its own recreation area.

C:outdoor recreation

1 THE TOURIST INDUSTRY

The major problem facing the tourist industry in the Geraldton District is the extension of forest access roads into areas that were previously inaccessible. This is impacting upon outpost camps and lodges in two ways: 1) through the loss of remoteness; and

2) through increased pressure on the fish and wildlife resources.

The loss of remoteness occurs when roads are constructed or harvesting operations occur close to lakes with tourist establishments. Noise and the visual disamenity associated with harvesting operations adversely affect the tourist's enjoyment of his vacation and may influence his willingness to return.

Increased pressure on the fish and wildlife resources can result when access roads are constructed close to previously inaccessible lakes or across major river systems. Since remote tourist establishments are dependent upon the provision of high quality hunting and fishing any reduction in quality could adversely affect the viability of the business.

2. MOOSE

The provincial moose herd today is 35 percent smaller than it was 15 years

ago. In areas where roads, logging trails, rivers and lakes provide good access for hunters, moose have declined. In inaccessible places, the herds are holding their own, and providing some emigrants to restock nearby regions. Except for fly-in expeditions, few hunters walk more than five miles from where they leave their vehicles or boats.

With increasing road access in the Geraldton District, we can expect increasing pressure on the moose herd in presently inaccessible areas. It is the role of the moose management program to control the annual harvest but there are implications for land use planning especially with respect to control of access.

D:resource products

1. COMMERCIAL FISHING

The commercial fishing industry in Geraldton District is only a marginally profitable enterprise, at present. South of the Albany River, fishermen cannot deal in volume because there are no suitable large lakes and the yellow pickerel resource is utilized by anglers rather than commercial fishermen. North of the Albany River, more of the fisheries resource is available, but transportation costs discourage expansion. Presently, the industry is producing far below potential as defined by quotas.

a. Mercury Contamination

In the Geraldton District, lake whitefish, cisco, and suckers do not often reach the critical mercury level of 0.5ppm. However, on several lakes northern pike and yellow pickerel have mercury concentrations above 0.5ppm and restrictions have been imposed. Five lakes have been closed to commercial fishing and fish from 10 other lakes must be detained and sampled. A process has been developed where fish from some lakes, slightly over the 0.5ppm concentration may be blended with fish from other acceptable lakes, and the product sold on the open market.

The change in the acceptable concentration of mercury from 0.5ppm to 1.0ppm in the United States may mean a reclassification of the above-

mentioned lakes and the development of new markets.

b. Parasites

Lake whitefish and cisco are often parasitized by the cestode parasite, Triaenophorus crassus, which encysts in the flesh. They are not harmful to man but are unsightly. The federal government has set up standards to classify the infestation level of various lakes. Fifteen lakes in the Geraldton District require a yearly inspection and fish can be exported to the United States; fish from lakes can be shipped interprovincially without cutting but each export to the U.S. must be cut; fish from 4 lakes are recommended for candling and deboning for European sales only (they must be cut for interprovincial sale or U.S. export).

2. COMMERCIAL FUR INDUSTRY

The economic viability of the commercial fur industry varies from year to year depending on international markets. Other problems affecting the future of the industry include: 1) the declining interest demonstrated in trapping by younger people; 2) the attraction of alternate employment; and 3) the increasing cost of transportation in the isolated areas.

Conflicts between the commercial fur industry and other resource users may also develop. Some trappers believe that timber harvesting destroys much of the fur bearers habitat. Any large areas set aside for parks could affect the trapping industry because the harvest of fur-bearers is usually prohibited.

3. TIMBER HARVESTING

As a result of the identified fibre shortage in Northern Ontario, any withdrawl of large land areas from the harvesting of timber could adversely affect the industry. These withdrawls could result from two sources;

1) the establishment of provincial parks; and
2) the loss of land area from harvesting to mitigate conflicts with the tourist industry.

4. MINING

With the development of access into the remote areas of the district the level of mining exploration can be expected to increase. Any withdrawl of areas from exploration (especially areas of identified high or medium mineral potential) could adversely affect their program. The major conflict would arise with the establishment of candidate provincial park

areas where exploration would not be permitted.

BIBLIOGRAPHY

Ahti, T. 1958."Preliminary survey of the range of woodland caribou in Ontario;" Ontario Department of Lands and Forest. Wildlife Section. (Unpublished synopsis of a research report.)

Banfield, A.W.F. 1974. The mammals of Canada. Univ. of Toronto Press, Toronto, Ontario. pp. 285-295

Bergerud, A.T. 1971. The population dynamics of Newfoundland caribou. Wildlife Monog. No. 25.55pp.

Berner, A. and Gysell, L.W. 1969. Habitat analysis and management consideration for ruffed grouse for a multiple use area in Michigan. J. Wildl. Manage. 33(4): 769-778

Black, L. "The Prehistory of the North Central Region of Ontario." Ontario Ministry of Natural Resources. 1980. (Mimeograph)

Carlson, E. "Commercial Fishing in the Geraldton District." Fisheries Technical Report No. 2; Ontario Ministry of Natural Resources. 1979. (Mimeograph.)

Chapman, L.T. and Thomas, M.R. The Climate of Northern Ontario. Climatological Study No. 6. Meteorological Branch. Canadian Department of Transport. Toronto, 1959.

Cummings, H. 1978. First progress report on research project concerning the effects of logging on caribou. Lakehead Univ.

Dawson, J.B. 1972. The Ruffed Grouse in Ontario. Ontario Ministry of Natural Resources. 12pp.

Dodds, D.G. 1974. Distribution, habitat and status of moose in the Atlantic provinces of Canada and Northeastern United States. Le. Naturaliste can., 101: 51-55

Driben, P. and Trudeau, R.S. "The Fort Hope Experience: Change, Adaptation and Freedom." 1970. (Mimeographed.)

Ellison, L.N. 1976 Winter food selection by Alaskan spruce grouse. J. Wildl. Manage. 40(2): 205-213

Environment Canada. Canadian Normals, Precipitation (1941 to 1970). Downsview, Ontario. 1975.

Erickson, A.W., Nellor, J. and Petrides, G.A. 1964. The black bear in

in Michigan. Res. Bull. No. 4, Mich. State Univ. East Lansing, Mich. 102 pp

Free, S. 1968. New York black bear management and research. Pages 40-41. In Proc. Bear Workshop 1. Ed. by A.M.Pearson. 63pp.

Gray, P.A. 1978. Native peoples harvest of woodland caribou (Rangifer tarandus caribou) in the West Patricia Planning Area, 1960-1978. Wildlife Technical Report No. 3. Ontario Ministry of Natural Resources. (Mimeographed.)

Hamilton, G.D. 1978a. Woodland caribou: a reveiw with special reference to the West Patricia Planning Area. Wildlife Technical Report No. 4. Ontario Ministry of Natural Resources. (Mimeographed).

Hamilton, G.D. 1978b. Aerial census of woodland caribou populations in the West Patricia Planning Area. Wildlife Technical Report No. 6. Ontario Ministry of Natural Resources. (Mimeographed).

Hamilton, G.D. 1979. Reassessment of woodland caribou populations in the West Patricia Planning Area. Wildlife Technical Report No. 15. Ontario Ministry of Natural Resources. (Mimeographed.)

Hatfield, C.T., Peterson, G.R., Bengeyfield, Wm., Williams, G.L., and Smith, G.M. 1977. Survey of Selected Living Aquatic Resources from Spence Bay, N.W.T. to Longlac, Ontario, 1976. Polar Gas Project, Volume 1.

Keith, L.B. and Winberg, L.A. 1978. A demographic analysis of the snowshoe hare cycle. Wildl. Mono. No. 58. 70pp

Kolenosky, G.B. 1979. Wolf densities in the Geraldton District. Personal comman.

Kolenosky, G.B. 1980. A summary of black bear ecology and management. Ontario Ministry of Natural Resources. (Mimeographed.)

Krefting, L.W. 1974. Moose distribution and habitat selection in north central North America. Le Naturaliste can., 101: 81-100.

Madson, J. 1969. Ruffed Grouse. Conserv. Dept., Winchester-Western Div., Olin Mathieson Chemical Corp., E. Alton, Illinois. 103pp

Mech, L.D. 1970. The Wolf: The Ecology and Behavior of an Endangered Species. Doubleday and Co., Inc. N.Y.

Mech, L.D. 1977. Productivity, mortality, and population trends of wolves in northeastern Minnesota. J. Mammal. 58(4): 559-574

Murie, O.J. 1974. A field guide to animal tracks. Houghton Mifflin Company, Boston. 375 pp.

Northern Ontario Tourist Outfitters Association and the Ontario Ministry of Northern Affairs. The Hunting and Fishing Lodge Industry in Northern Ontario, prepared by Ruston/Shanahan & Associates Ltd.; Hough, Stansbury & Associates Ltd; Jack B. Ellis and Associates Ltd. 1979.

Ontario Ministry of Intergovernmental Affairs. Municipal Directory, 1980

Toronto, Ontario: the Queen's Printer, 1980.

Ontario Ministry of Natural Resources. Crown Land Recreation Study Phase 1 - The Status Quo, prepared by Hough, Stansbury & Associates Limited with Jack B. Ellis and Associates Limited. Toronto, 1977.

Ontario Ministry of Natural Resources. District Office Files. Geraldton 1980.

Ontario Ministry of Natural Resources. Land Use Planning Guidelines Toronto, 1980.

Ontario Ministry of Northern Affairs. Directory. 1978.

Polar Gas Project. Public Interest, Socio-Economic Statement, Manitoba and Ontario. 1979.

Prest, V.K. 1963. Red Lake - Lansdowne House Area, Northwestern Ontario, Surficial Geology. Geol. Surv. Canada Paper 63-6, 23p

Royal Commission of the Northern Environment. "North of 50° - Phase II (Draft)," prepared by James F. MacLaren Ltd. 1979. (Mimeographed.)

Statistics Canada. Census Information, 1971 and 1976. Ottawa.

Wang, K.T. and Chin, V.I. 1978. Northern Ontario Water Resources Studies - Ground Water Resources. Water Resources Branch, Ontario Ministry of the Environment. Toronto, Ontario.

Zoltai, S.C. 1967. Glacial Features of the North Central Lake Superior Region, Ontario. Canadian Journal of Earth Sciences, Vol. 4, p. 515-528.

ERRATA

1. Page 106, line 27: should read "... 3,076,012 net merchantable cubic meters ...";

2. Page 108, Table 40: should read

Domtar Inc., Forest Products	200	76	17,475	8,142
American Can of Canada Ltd.	611	638	119,223	74,820
Geraldton District Total	17,344	6,140	2,195,542	880,470

PLEASE COMPLETE AND RETURN

Any comments relating to the listed policy areas would be most appreciated. Also, you can tell us if there are any errors or omissions in the document. Your input will assist in the preparation of optional plans. For further information, please contact the Ministry of Natural Resources district office in Geraldton.

My concerns are

- ☐ Agriculture
- ☐ Commercial Fur (Trapping)
- ☐ Mining
- ☐ Provincial Parks
- ☐ Aggregate Extraction
- ☐ Crown Land Recreation
- ☐ Forestry (Logging)
- ☐ Crown Land Cottaging
- ☐ Wildlife (Hunting)
- ☐ Tourism
- ☐ Commercial Fishing
- ☐ Other
- ☐ Sport Fishing
- ☐ Other Comments

over

☐ Wild Rice

Please Note: All comments or submissions relating to the Geraldton Land Use Plan are being considered as information which is available to the general public.